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UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

BULLETIN 453

RESULTS OF SPIRIT LEVELING
IN MINNESOTA

1897 TO 1910, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER

WORK DONE IN COOPERATION WITH THE STATE OF MINNESOTA
DURING 1909 AND 1910



WASHINGTON
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1911

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RESULTS OF SPIRIT LEVELING IN MINNESOTA, 1897 TO 1910, INCLUSIVE.

R. B. MARSHALL, *Chief Geographer.*

INTRODUCTION.

Scope of the work.—All results of spirit leveling in Minnesota previously published by the United States Geological Survey and all the results of later work in the State are included in this report, rearranged by quadrangles. All elevations are based on the precise-level net adjustment of 1907 by the United States Coast and Geodetic Survey to a common mean sea level datum. The part of this net which lies within or along the borders of Minnesota comprises the line along Mississippi River from the southeast corner of the State to Lake Itasca, the line from Brainerd via Aitkin and Grand Rapids to Cass Lake, the line of the Corps of Engineers, United States Army from St. Paul to Duluth, and also the following lines by the Coast and Geodetic Survey: St. Cloud via Evansville and Childs to Ortonville, and Evansville via Fergus Falls and Crookston to Stephen.

Personnel.—The field work previous to 1903 was done under the general direction of J. H. Renshawe, geographer; that for 1903 to 1906, inclusive, under H. M. Wilson, geographer; and the later work under W. H. Herron, geographer, under the general direction of R. B. Marshall, chief geographer. Credit is given to the different levelmen in the introduction to each list. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, and D. H. Baldwin, topographer, and since 1907, under the general direction of E. M. Douglas, geographer.

Classification.—The elevations are classified as precise or primary, according to the methods employed in their determination. For precise-level lines instruments and rods of the highest grade are used, each line is run in both forward and backward directions, and every precaution is taken to guard against error. The allowable divergence between the forward and the backward lines in feet is represented by the formula $0.017\sqrt{D}$, in which D is the distance in miles between bench marks. For primary lines standard Y levels are used; lines

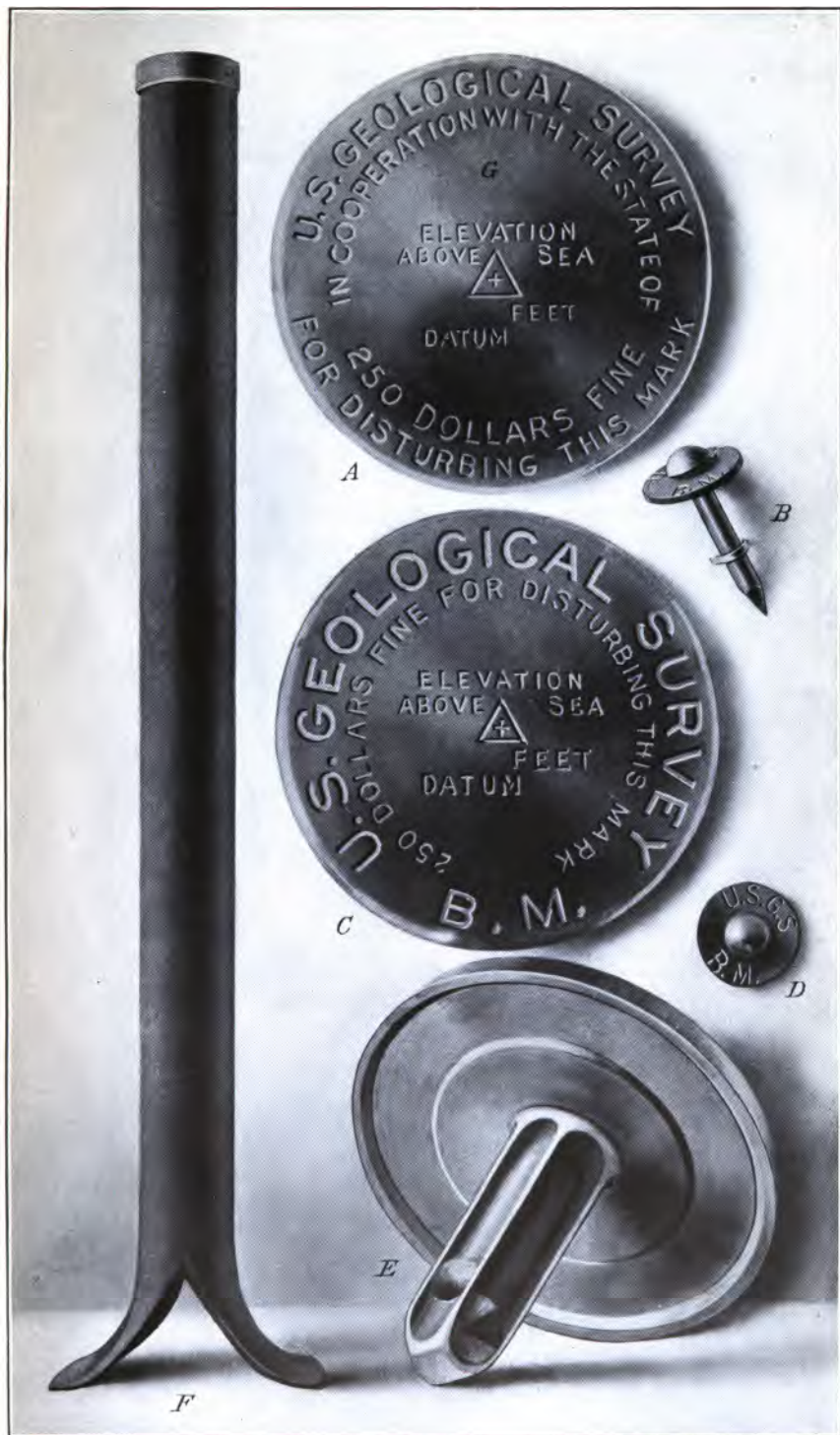
are run in circuits or are closed on precise lines, with an allowable closing error in feet represented by $0.05 \sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given to the work to maintain this standard. For levels of both classes careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (C and E , Pl. I), $3\frac{1}{4}$ inches in diameter and one-fourth inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (F , Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post $3\frac{1}{4}$ inches in outer diameter and 4 feet in length after being split at the bottom and expanded to a width of 10 inches in order to give a firm bearing on the earth. A bronze or aluminum-bronze cap is riveted over the top of the post, which is set about 3 feet in the ground. A third style of bench mark with abbreviated lettering (B and D , Pl. I), is used for unimportant points. This consists of a special copper nail, $1\frac{1}{2}$ inches in length, driven through a copper washer seven-eighths of an inch in diameter.

The tablets as well as the caps on the iron posts are appropriately lettered, and for cooperating States the fact of such cooperation is indicated by the addition of the State name (at G , Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot, as determined by the levelman. These numbers are stamped with $\frac{3}{16}$ -inch steel dies on the tablets or post caps, to the left of the word "feet." The office adjustment of the notes and the reduction to mean sea level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of tides and winds were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions, such as long narrow bays, rivers, and like features will not affect the



GEOLOGICAL SURVEY BENCH MARKS.

A, Tablet used in cooperating States. The State name is inserted at *G*.
B and *D*, Copper temporary bench mark, consisting of a nail and copper washer.
A, *C*, and *E*, Tablets for stone or concrete structures.
F, Iron post used where there is no rock.

height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea level as determined from observations in the Atlantic Ocean, the Gulf of Mexico, or the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "Datum" on tablets or posts. For such areas corrections of published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

There are included herewith the results of leveling in certain wet, overflowed, or swampy lands, ceded by the Chippewa Indians, in the counties of Beltrami, Itasca, Marshall, Polk, Red Lake, and Roseau, the survey of which was specifically provided for by Congress June 21, 1906, and finally reported upon in House Document 27, Sixty-first Congress, first session. The elevations of bench marks given in that document have been corrected to agree with the adjustment of precise leveling made in 1907.

Maps of the following quadrangles, wholly or partly in Minnesota, have been published by the United States Geological Survey up to February 15, 1911. They may be obtained for 5 cents each, or \$3 a hundred, on application to the Director of the Survey at Washington, D. C.

Anoka.
Duluth.
Fargo (N. Dak.-Minn.).
Herman.
Minneapolis.
Minnetonka.

Rockford.
St. Croix Dalles (Wis.-Minn.).
St. Paul.
Wahpeton (N. Dak.-Minn.).
White Bear.

PRECISE LEVELING.

Badger, Baudette, Clementson, Crookston, International Falls, Pelland, Red Lake Falls, Roseau, Thief River Falls, and Warroad Quadrangles.

BELTRAMI, ITASCA, MARSHALL, POLK, RED LAKE, AND ROSEAU COUNTIES.

The elevations in the following list are the result of a line of precise levels run by C. H. Semper in 1906 from Crookston to Middle River, and extended in 1907 by E. L. McNair from Middle River northward along the Great Northern Railway to Greenbush; thence along highways via Badger and Roseau to Warroad, a small town on the Canadian Northern Railway at the southwestern extremity of the Lake of the Woods and only about 7 miles south of the forty-ninth parallel; thence eastward along the Canadian Northern Railway to

Baudette, on Rainy River; thence along the south bank of Rainy River—the line being cut through the forest a considerable part of the distance—to International Falls, opposite the older Canadian town of Fort Francis. Elevations are based on the bench mark "City" of the Coast and Geodetic Survey at Crookston, which is taken as 869.278 feet above mean sea level.

CROOKSTON QUADRANGLE.

Crookston along Great Northern Railway via Tilden Junction and Thief River Falls to Middle River (portion of line).

Crookston, Polk County, Minn., "City" bench mark, at entrance of Merchants' National Bank building, on northwest corner of Second and Main Streets; as square outline on the north side of the top of the first step (Coast and Geodetic Survey bench mark).....	Feet. 869. 278
Crookston, 3.38 miles east of, at railroad crossing, southeast corner of fence; iron post stamped "888".....	888. 509
Crookston, 6.27 miles east of, south side of track, railroad crossing, corner fence; iron post stamped "905".....	905. 660

RED LAKE FALLS QUADRANGLE.

Crookston along Great Northern Railway via Tilden Junction and Thief River Falls to Middle River (portion of line).

Burwell, 1.82 miles east of, 50 feet south of track, 60 feet west of road, in corner of fence; iron post stamped "927".....	927. 394
Burwell, 4.63 miles east of, north side of track, 8 feet east of milepost 11; iron post stamped "991".....	991. 208
Burwell, 7.31 miles east of, 60 feet north of railroad on crossing, 50 feet west of road; iron post stamped "1035".....	1, 035. 800
Burwell, 10.43 miles east of, south side of track, second telegraph pole west of milepost 17; iron post stamped "1103".....	1, 103. 102
Tilden Junction, 2.02 miles north of, east side of track, opposite milepost 59, at fence line; iron post stamped "1095".....	1, 095. 072
Delorme, 0.57 mile north of, railroad crossing, 30 feet west of track, 3 feet north of crossing signboard, 389 feet south of milepost 63; iron post stamped "1092".....	1, 092. 360
Perault, 0.34 mile north of, railroad crossing, east side of track, 358 feet south of milepost 65; iron post stamped "1043".....	1, 043. 307
Perault, 3.13 miles north of, west side of track, 30 feet north of switch to Red Lake Falls, on east margin of highway; iron post stamped "1035".....	1, 035. 459
Red Lake Falls, 1.07 miles north of, between main line track and switch to Red Lake Falls Milling Co., 25 feet east of main track, Great Northern Ry.; iron post stamped "984".....	984. 674
Red Lake Falls, 4.31 miles north of, west side of track, 8 feet northwest of milepost 5; iron post stamped "1071".....	1, 071. 491
Red Lake Falls, 7.26 miles north of, east side of track, 150 feet east of milepost 2; iron post stamped "1086".....	1, 086. 041

THIEF RIVER FALLS QUADRANGLE.

Crookston along Great Northern Railway via Tilden Junction and Thief River Falls to Middle River (portion of line).

St. Hilaire, 362 feet north of station, road crossing, 30 feet west of track; iron post stamped "1091".....	1, 091. 154
St. Hilaire, 2.59 miles north of, railroad crossing, west of track, at northwest corner of fence; iron post stamped "1102".....	1, 102. 630

St. Hilaire, 5.63 miles north of, railroad crossing, northeast corner of highway, at fence corner; iron post stamped "1124".....	Feet. 1, 124. 126
Thief River Falls, First National Bank building, west fence, between window; aluminum tablet stamped "1137".....	1, 137. 699
Thief River Falls, 3.58 miles north of, road crossing, 100 feet east of track at southwest corner of fence; iron post stamped "1133".....	1, 132. 963
Thief River Falls, 6.38 miles north of, west side of track, 3 feet north of milepost 35; iron post stamped "1139".....	1, 139. 108
Steiner, 2.46 miles north of, west side of track, 5 feet north of milepost 38; iron post stamped "1152".....	1, 152. 791
Sandridge, 287 feet north of station, west side of track, 30 feet south of water tank; iron post stamped "1157".....	1, 156. 887
Sandridge, 3.02 miles north of, west side of track, 15 feet west of milepost 44; iron post stamped "1144".....	1, 144. 627
Sandridge, 5.95 miles north of, northwest side of track, 20 feet northwest of milepost 47; iron post stamped "1143".....	1, 143. 772
Middle River, 0.75 mile south of, 6 feet west of milepost 50; iron post stamped "1147".....	1, 147. 699

Middle River along Great Northern Railway to Greenbush (portion of line).

Middle River, 2.1 miles north of, 200 feet north of milepost 63, 60 feet east of track; iron post stamped "1169".....	1, 169. 131
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BADGER QUADRANGLE.

Middle River along Great Northern Railway to Greenbush (portion of line).

Strathcona, 1.2 miles south of, 360 feet north of milepost 58, 45 feet east of track, at edge of right of way; iron post stamped "1139".....	1, 139. 372
Strathcona, 96 feet west of center of track, 18 feet north of center of wagon road, 9 feet west of ditch; iron post stamped "1126".....	1, 126. 659
Strathcona, 0.75 mile north of, 50 feet west of center of track, 35 feet northwest of milepost 60, at edge of right of way; iron post stamped "1120".....	1, 120. 011
Strathcona, 3.8 miles north of, opposite milepost 63, 45 feet east of track, at edge of right of way; iron post stamped "1099".....	1, 099. 388
Greenbush, 3.6 miles south of, opposite milepost 66, 45 feet west of track; iron post stamped "1071".....	1, 071. 416
Greenbush, 0.5 mile south of, 45 feet west of track, 15 feet northwest of second telegraph pole north of milepost 69; iron post stamped "1073".....	1, 073. 126

Greenbush along highway via Badger, Roseau, and Pequis to Warroad (portion of line).

Greenbush, 1.2 miles north of, on main highway, 30 feet east of road, 45 feet west of railroad grade, 6 feet north of telephone pole; iron post stamped "1075".....	1, 075. 624
Greenbush, 3.6 miles northeast of, 90 feet northeast of schoolhouse, T. 161, R. 42, about at corner of secs. 29, 30, 31, and 32, 20 feet west of road; iron post stamped "1080".....	1, 080. 265
Greenbush, 6.4 miles northeast of, 4 feet north of telephone pole, 21 feet west of road, by third pole north of house; iron post stamped "1086"....	1, 085. 956
Badger Creek; water surface, June 27, 1907.....	1, 066. 0
Badger, 375 feet northwest of church, 186 feet northeast of Badger Feed and Sale Stable, 6 feet east of sidewalk, at corner of fence; iron post stamped "1084".....	1, 084. 200

ROSEAU QUADANGLE.**Greenbush along highway via Badger, Roseau, and Pequis to Warroad (portion of line).**

Badger, 3.2 miles northeast of, 42 feet north of fence corner, 12 feet east of center of main road, 170 feet north of house owned by Mr. Anderson, in NE. $\frac{1}{4}$ sec. 32; iron post stamped "1086"	Feet. 1, 086. 282
Fox, 20 feet west of north-south section line, between secs. 26 and 27, 135 feet south of corner of secs. 22, 23, 26, and 27, T. 162, R. 41; iron post stamped "1092"	1, 092. 787
Fox, 3.8 miles east of, 24 feet west of center of road, at fence corner, NE. $\frac{1}{4}$ sec. 20, T. 162, R. 40, on line with north-south fence; iron post stamped "1094"	1, 094. 457
Roseau, 0.25 mile west of main street, southwest corner of, sec. 13, T. 162 N., R. 39 W., 28 feet north of center of road on section line and 38 feet east of center of road on section line, diagonally across from Norwegian Free Church; iron post stamped "1049"	1, 049. 519
Roseau River; water surface, July 1, 1907	1, 032. 0
T. 162 N., R. 39 W., 0.37 mile south of corner of secs. 19, 20, 29, and 30, at bend of road to southeast, 84 feet east of house of Mr. Seilstrom, 25 feet east of north-south road; iron post stamped "1066"	1, 066. 178
Tamarack swamp in sec. 33	1, 055
T. 161 N., R. 39 W., sec. 3, 2 miles west of Goos post office, in burnt clearing east of tamarack and spruce timber, 20 feet south of road and 20 feet north of large rock, in plain view; iron post stamped "1078"	1, 078. 431
Goos post office, 0.9 mile east of, sec. 1, T. 161 N., R. 39 W., about 45 feet southwest of corner common to secs. 1 and 36; iron post stamped "1101" ..	1, 101. 322
Pequis post office, just east of Hay Creek, southeast corner of yard fence at residence of Fred Pieper, 30 feet southeast of house and 25 feet north of center of road in sec. 26; iron post stamped "1101"	1, 101. 213

WARROAD QUADANGLE.**Greenbush along highway via Badger, Roseau, and Pequis to Warroad (portion of line).**

T. 162 N., R. 37 W., sec. 29, probably NE. $\frac{1}{4}$, 3.6 miles east of Pequis, 40 feet south of log cabin in clearing on claim of Alfred Otterson, 36 feet north of center of road, 1 foot south of fence; iron post stamped "1103" ..	1, 103. 665
Cedarbend post office, near NE. $\frac{1}{4}$ sec. 36, T. 162 N., R. 37 W., 75 feet west of Warroad River bank, 19 feet north of center of road, at southeast corner of garden fence, residence of Henry Stolz; iron post stamped "1103" ..	1, 103. 788
Cedarbend post office; water surface of Warroad River at, July 8, 1907....	1, 095
T. 162 N., R. 36 W., near line between secs. 5 and 8, 0.33 mile northeast of schoolhouse, at angle in road, 25 feet west of road and 5 feet north of corner fence post; iron post stamped "1082"	1, 081. 974
Warroad, at west end of lake, 39 feet southwest of crossing of Lake and State Streets, on public school grounds, 163 feet east of schoolhouse; iron post stamped "1069"	1, 069. 490
Lake of the Woods; water surface, July 10, 1907, range of level between 3 and 4 feet, now about medium	1, 061. 7
Warroad, 1,100 feet east of Lake Street crossing of Canadian Northern Railway, 145 feet east of Mr. Moody's residence, 40 feet north of edge of river and 55 feet southeast of corner of outbuilding on Mr. Moody's grounds; iron post of U. S. Engineer Corps No. 303, elevation taken on top of cap. ..	1, 067. 606
Engineer Corps elevation on assumed datum	1, 012. 71

Warroad along Canadian Northern Railway to Baudette (portion of line).

Swift flag station, 360 feet west of road crossing on township line, 40 feet north of track and 57 feet south of Warroad Mercantile Co.'s store, NE. $\frac{1}{4}$ sec. 13, T. 162 N., R. 36 W.; iron post stamped "1085"	Feet. 1, 085. 272
Roosevelt, 156 feet west of Canadian Northern Railway station, 35 feet north of track, just west of telegraph pole; iron post stamped "1163"...	1, 163. 227

BAUDETTE QUADRANGLE.**Warroad along Canadian Northern Railway to Baudette (portion of line).**

Milepost 308, 8 feet west of, 35 feet south of track; post stamped "1181"..	1, 181. 644
Williams station, water surface of creek at, July 17, 1907.....	1, 135
Williams, 180 feet west of station, 70 feet east of head block at west end of switch, 43 feet south of center of track, 57 feet north of northwest corner of hotel; iron post (not stamped).....	1, 155. 085
Graceton, 57 feet southeast of corner of station, 36 feet south of center of track, 2 feet south of telegraph pole; iron post stamped "1140".....	1, 140. 044
Pitt flag station, 220 feet west of switch block at east end of siding, 33 feet south of center of track, 3 feet west of telegraph pole; iron post stamped "1110".....	1, 110. 342
Winterroad River; water surface, July 20, 1907.....	1, 077
Baudette, 650 feet east of station, on north wing wall of west abutment of Canadian Northern Railway bridge over Rainy River, set vertically in capstone; aluminum tablet stamped "1084".....	1, 084. 282
Rainy River; water surface at Canadian Northern Railway bridge, July 22, 1907.....	1, 062. 1

Baudette along south bank of Rainy River to International Falls (portion of line).

T. 160 N., R. 30 W., corner secs. 5, 6, 7, and 8, set on south side of and in contact with corner post; iron post stamped "1093".....	1, 093. 661
Rainy River; water surface at mouth of Rapid River, July 29, 1907.....	1, 062. 6
Rapid River, near mouth of, 64 feet northeast of corner of H. Clementson's house, 175 feet west of rapids, in exposed ledge of bedrock slightly above surface of ground; aluminum tablet stamped "1088".....	1, 087. 976
Rapid River, water surface above rapids, about 300 feet from mouth, July 29, 1907.....	1, 071

CLEMENTSON QUADRANGLE.**Baudette along south bank of Rainy River to International Falls (portion of line).**

T. 160 N., R. 29 W., NE. $\frac{1}{4}$ sec. 5, 35 feet south of corner of house owned by S. Tornquist, 400 feet from river bank; iron post stamped "1089"...	1, 089. 408
T. 160 N., R. 29 W., sec. 1, opposite mouth of Pine River on Canadian side, 520 feet east of house of James Pirie (deceased), 250 feet west of Henry Vog's house, close to boundary line between two places, on brow of river bank; iron post stamped "1086".....	1, 086. 429
Black Creek, water surface at mouth of, Aug. 9, 1907.....	1, 062. 71
T. 160 N., R. 28 W., corner secs. 20, 21, 28, and 29, beside corner stake, 815 feet southwest of Mr. Murphy's store, Frontier post office, 815 feet southwest of nearest point of river bank; iron post stamped "1086"....	1, 086. 660
T. 160 N., R. 28 W., 215 feet west of range line between Rs. 27 and 28, in sec. 25, on point of land between creek and river, opposite Bernstein's house on Canadian side, just below Boucherville, about 330 feet east of Brindle's house; iron post stamped (incorrectly) "1081".....	1, 082. 435

T. 160 N., R. 27 W., on cleared land 30 feet due west of corner secs. 27, 28, 29, and 30, 1 mile north of Birchdale post office; iron post stamped "1111".....	Feet. 1, 111. 754
Rainy River; water surface at Birchdale Landing, July 20, 1907.....	1, 063. 7
T. 160 N., Rs. 26 and 27 W., on range line between secs. 31 and 36, on south side of well-cut trail or road, 85 feet south of bearing trees for meander corner at river's edge; iron post stamped "1093".....	1, 093. 503

PELLAND QUADRANGLE.

Baudette along south bank of Rainy River to International Falls (portion of line).

T. 160 N., R. 26 W., sec. 34, 150 feet east of line between secs. 33 and 34, in large rock at water's edge, Rainy River, in rock about 6 feet long and standing 3 feet out of water; aluminum tablet stamped "1074".....	1, 073. 932
Rainy River; water surface at Lundy's mill, opposite Barwick, Ontario, Aug. 28, 1907.....	1, 071. 6
Tps. 159 and 160 N., Rs. 25 and 26 W., near corner of, 35 feet west of range line and 15 feet north of township line; iron post stamped "1113".....	1, 113. 004
T. 159 N., R. 25 W., NE. $\frac{1}{4}$ sec. 3, Indus post office, on brow of slope descending to river, at edge of board walk between H. Scholta's saloon and Indus Mercantile Co.'s store; iron post stamped "1106".....	1, 106. 842
Rainy River; water surface at Indus, Sept. 3, 1907.....	1, 075. 6
T. 159 N., R. 25 W., in southwest corner sec. 23, 30 feet east of corner of secs. 22, 23, 26, and 27; iron post stamped "1097".....	1, 097. 430
Tps. 158 and 159 N., R. 25 W., 93 feet due east of corner of secs. 2, 3, 34, and 35, 5 feet west of balsam line tree; iron post stamped "1100".....	1, 100. 366
Black River; water surface, Sept. 11, 1907.....	1, 077. 8
T. 158 N., R. 25 W., corner secs. 11, 12, 13, and 14 (corner post not found, but its position closely located by Mr. Metcalf, farmer); iron post stamped "1098".....	1, 098. 662
Big Fork River, water surface one-half mile above mouth, Sept. 12, 1907..	1, 078. 6
T. 70 N., R. 26 W., NE. $\frac{1}{4}$ sec. 32, 370 feet south of bank of Rainy River at Fred Smith's place (Laurel store and post office), 40 feet east of southeast corner of Smith's barn, in fence corner; iron post stamped "1102".....	1, 102. 375
T. 70 N., on range line between Rs. 25 and 26 W., 528 feet due north of corner of secs. 25, 30, 31, and 36; iron post stamped "1106".....	1, 106. 132
Little Fork River; water surface, Oct. 2, 1907.....	1, 080. 7
T. 70 N., R. 25 W., corner secs. 23, 24, 25, and 26, beside corner post; iron post stamped "1124".....	1, 124. 732

INTERNATIONAL FALLS QUADRANGLE.

Baudette along south bank of Rainy River to International Falls (portion of line).

T. 70 N., R. 24 W., 246 feet west of corner secs. 16, 17, 20, and 21, on section line; iron post stamped "1149".....	1, 149. 694
T. 70 N. R. 24 W. SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 4, 860 feet northeast of end of curve, 50 feet northwest of center of track, at clay cut, on land of Robert Irwin; iron post stamped "1152".....	1, 151. 992
International Falls, 300 feet north of First Street, in line with Third Avenue, 180 feet southwest of edge of Rainy River, in ledge of solid rock in front of office of Maguire & Penniman (temporary); aluminum tablet stamped "1126".....	1, 125. 976
International Falls, along bank of river on north side of Riverside drive, 10 feet south of brow of river bank, 650 feet northeast of Eighth Avenue, in line with Seventh Avenue; iron post stamped "1121".....	1, 121. 850
Rainy River; water surface (above falls), Oct. 10, 1907.....	1, 107. 7
Rainy River; water surface (below falls), Oct. 10, 1907.....	1, 083. 7

PRIMARY LEVELING.

PRIMARY LEVELS ENCIRCLING AND WITHIN THE AREA OF THE
MUD LAKE DRAINAGE PROJECT.

Bagley, Bede, Bemidji, Buena Vista, Fosston, Liner, Malcolm, Roseau, Otto,
Thief River Falls, and Warroad Quadrangles.

BELTRAMI, CLEARWATER, MARSHALL, POLK, RED LAKE, AND ROSEAU COUNTIES.

In the following list of standard bench marks, established by
C. H. Semper in 1906, no figures of elevation were stamped upon
the posts.

THIEF RIVER FALLS QUADRANGLE.

Thief River Falls east to Beltrami County line (portion of line).

	Feet.
T. 154 N., Rs. 42 and 43 W., corner of secs. 25, 30, 31, and 36; iron post...	1, 131. 339
Tps. 153 and 154 N., R. 42 W., corner of secs. 4, 5, 32, and 33; iron post...	1, 137. 476
Tps. 153 and 154 N., R. 42 W., corner of secs. 1, 2, 35, and 36; iron post...	1, 150. 719

LINER QUADRANGLE.

Thief River Falls east to Beltrami County line (portion of line).

Tps. 153 and 154 N., R. 41 W., corner of secs. 4, 5, 32, and 33; iron post...	1, 157. 154
Tps. 153 and 154 N., R. 41 W., corner of secs. 1, 2, 35, and 36; iron post...	1, 166. 466
Tps. 153 and 154 N., R. 40 W., corner of secs. 4, 5, 32, and 33; iron post...	1, 174. 297
Tps. 153 and 154 N., R. 40 W., corner of secs. 1, 2, 35, and 36; iron post...	1, 178. 579
Tps. 153 and 154 N., R. 39 W., corner of secs. 4, 5, 32, and 33; iron post (northwest corner of crossroad).....	1, 183. 195
Tps. 153 and 154 N., R. 39 W., corner of secs. 1, 2, 35, and 36, 33 feet south of large granite boulder; iron post. (Note: Ground very boggy and bench mark loose).....	1, 182. 884

Thief River Falls north along range line to McPhall.

T. 154 N., Rs. 38 and 39 W., corner of secs. 24, 25, 19 and 30 (no section post); iron post.....	1, 185. 916
T. 154 N., R. 39 W., SE., $\frac{1}{4}$ sec. 1, 150 feet east of N. J. Jorgenson's house, at barnyard fence (no section corner found); iron post.....	1, 184. 490

MALCOLM QUADRANGLE.

McPhall east to Sand Ridge.

T. 155 N., R. 38 W., corner of secs. 29, 30, 31, and 32, near wire fence; iron post.....	1, 189. 232
T. 155 N., R. 38 W., corner of secs. 26, 27, 34, and 35; iron post.....	1, 196. 149
T. 155 N., R. 37 W., corner of secs. 29, 30, 31, and 32, near wire fence line; iron post.....	1, 207. 448
T. 155 N., R. 37 W., corner of secs. 26, 27, 34, and 35; near wire fence line; iron post.....	1, 212. 558
T. 155 N., R. 36 W., corner of secs. 19, 20, 29, and 30; iron post.....	1, 225. 684
T. 155 N., R. 36 W., center of sec. 27, 35 feet north of quarter corner; iron post.....	1, 230. 631

Sand Ridge north 8 miles, thence west to Malcolm.

T. 155 N., R. 36 W., NE. $\frac{1}{4}$ sec. 14, at north end of Sand Ridge, east end of clearing, 25 feet east of large poplar tree; iron post.....	1, 245. 850
T. 156 N., R. 36 W., corner of secs. 15, 16, 21, and 22, near fence line; iron post.....	1, 239. 234

T. 156 N., Rs. 36 and 37 W., corner of secs. 13, 18, 19, and 24, near fence line; iron post.....	Feet. 1, 229. 316
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Malcolm west via Grygla to Liner, thence north to Gatske (portion of line).

T. 156 N., R. 37 W., corner of secs. 22, 23, 26, and 27; iron post.....	1, 224. 736
T. 156 N. R. 37 W., northwest corner of NE. $\frac{1}{4}$ sec. 31, northwest corner of Ole Baklund's farm; iron post.....	1, 210. 560

LINER QUADRANGLE.

Malcolm west via Grygla to Liner, thence north to Gatske (portion of line).

T. 155 N., R. 38 W., sec. 2, 768 feet north of Carmel post office; iron post..	1, 202. 047
Tps. 155 and 156 N., R. 38 W., corner of secs. 5, 6, 31, and 32, at northwest corner of fence; iron post.....	1, 187. 225
T. 156, R. 39 W., southeast corner of sec. 26, Grygla post office, A. O. Fladeland's yard; iron post.....	1, 179. 069
T. 156, R. 39 W., sec. 19, 110 feet southeast of store at Liner post office, at corner of wire fence; iron post.....	1, 166. 978
T. 157 N., R. 40 W., NE. $\frac{1}{4}$ sec. 36, on John Saxvold's farm; iron post.....	1, 172. 356
T. 157 N., R. 40 W., corner of secs. 11, 12, 13, and 14, west side of road; iron post.....	1, 183. 042

Gatske west to Middle River (portion of line).

T. 157 N., R. 40 W., corner of secs. 3, 4, 9, and 10, south side of road; iron post.....	1, 181. 644
Thief Lake; water surface, Oct. 13, 1906.....	1, 163. 1
T. 157 N., Rs. 40 and 41, W., corner of secs 1, 6, 7, and 12, north side of road; iron post.....	1, 173. 830
T. 157 N., R. 41 W., corner of secs. 3, 4, 9, and 10, on north side of road; iron post.....	1, 155. 770
Thief River; water surface, Oct. 13, 1906, at section line between secs. 5 and 8.....	1, 147. 8
T. 157 N., R. 41 W., at quarter corner between secs. 6 and 7; iron post....	1, 154. 917

THIEF RIVER FALLS QUADRANGLE.

Gatske west to Middle River (portion of line).

T. 157 N., R. 42 W., corner of secs. 9, 10, 15, and 16; iron post.....	1, 154. 308
T. 157 N., Rs. 42 and 43 W., corner of secs. 7, 12, 13, and 18; iron post.....	1, 144. 245

The elevations in the following list were obtained as the result of primary leveling in the fall of 1906, by A. P. Meade, jr., Paul Funderhide, and R. P. Thompson. None of the bench marks have elevations stamped upon them.

Thief River Falls to Thorwick.

	Feet.
T. 154 N., R. 43 W., corner of secs. 22, 23, 26, and 27; iron post.....	1, 129. 781
T. 154 N., Rs. 42 and 43 W., corner secs. 7, 12, 13, and 18; iron post.....	1, 139. 671
Tps. 154 and 155 N., Rs. 42 and 43, west corner of secs. 1 and 36, on range line; iron post.....	1, 142. 090

Thorwick to Mud Lake.

T. 155 N., R. 42 W., corner of secs. 18 and 19, on range line; iron post.....	1, 139. 190
Tps. 155 and 156 N., R. 42 W., corner of secs. 4, 5, 32, and 33; iron post....	1, 139. 513
Elm Lake; water surface, Aug. 31, 1906.....	1, 143. 0
Mud Lake; water surface, Sept. 2, 1906.....	1, 140. 9

Thorwick east to Germantown and northeast to Liner (portion of line).

	Feet.
Tps. 154 and 155 N., R. 42 W., corner of secs. 3, 4, 33, and 34, 35 feet north-west of; iron post.....	1, 148. 253

LINER QUADRANGLE.**Thorwick east to Germantown and northeast to Liner (portion of line).**

Tps. 154 and 155 N., Rs. 41 and 42 W., corner of secs. 1, 6, 31, and 36, 60 feet south of; iron post.....	1, 150. 760
Germantown, corner of William Vaughan's house; iron post.....	1, 158. 428
T. 155 N., Rs. 40 and 41 W., quarter corner between secs. 13 and 18, 300 feet north of; iron post.....	1, 155. 736
T. 156 N., R. 40 W., SW. $\frac{1}{4}$ sec. 34; iron post.....	1, 160. 150

On Germantown and Grygla road.

T. 155 N., R. 40 W., NW. $\frac{1}{4}$ sec. 22, near bridge; iron post.....	1, 163. 184
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Other scattering bench marks.

T. 158 N., R. 40 W., in southwest corner of sec. 14, at forks of Randen Road and trail north; iron post.....	1, 206. 566
Erie post office, T. 153 N., Rs. 39 and 40 W., corner of secs. 13, 18, 19, and 24; iron post.....	1, 169. 465
Tps. 152 and 153 N., R. 39 W., corner of township line common to secs. 33 and 34; iron post.....	1, 167. 734
T. 157 N., Rs. 38 and 39 W., corner of secs. 1, 6, 7, and 12; iron post.....	1, 182. 215
T. 158 N., R. 40 W., between secs. 27 and 28, at corner of fence opposite house, 40 feet south of Moose River. Established in 1907; no elevation stamped.....	1, 166. 497

ROSEAU QUADRANGLE.**Scattering bench marks.**

T. 159 N., R. 39 W., sec. 34, probably in NE. $\frac{1}{4}$, along road going up Roseau River, about 400 feet southeast of vacant cabin, between river and road at bridge crossing river; iron post.....	1, 179. 307
T. 160 N., Rs. 38 and 39 W., corner of secs. 1, 6, 7, and 12; iron post. (This elevation is in doubt within limit of 1 foot).....	1, 107. 86
T. 159 N., R. 39 W., SE. $\frac{1}{4}$ sec. 18, on east side of road 300 feet north of old Casperson post-office, at bridge crossing Roseau River; iron post.....	1, 149. 73

WARROAD QUADRANGLE.**Scattering bench marks.**

T. 161 N., R. 35 W., SW. $\frac{1}{4}$ sec. 35, 150 feet east of Jack Meise's cabin, 500 feet east of section line, and about 200 feet north of county line between Roseau and Beltrami Counties; iron post.....	1, 227. 53
T. 159 N., R. 36 W., SW. $\frac{1}{4}$ sec. 14, on old Government inspector's trail; iron post.....	1, 268. 09
T. 159 N., R. 37 W., near center of sec. 17, at junction of trails, one north, one up Roseau River; iron post.....	1, 225. 27

BEDÉ QUADRANGLE.**Spur line—Loman up Black River.**

T. 158 N., R. 25 W., corner of secs. 28, 29, 32, and 33, 8 inches west of corner post; iron post stamped "1135".....	1, 135. 804
T. 158 N., Rs. 26 and 27 W., corner of secs. 19, 30, 24, and 25, 1.5 feet west of corner post; iron post stamped "1144".....	1, 144. 868

BEMIDJI QUADRANGLE.

Bemidji along Minneapolis, Red Lake & Manitoba Railway to Red Lake (portion of line).

Bemidji, Mississippi River Commission bench mark, 800 feet west of Great Northern Railway station, in corner of E. J. Willett's yard, on west side of Irving Avenue, north of Great Northern right of way; cap on top of iron post.....	Feet. 1,363.178
T. 146 N., Rs. 33 and 34 W., 60 feet southeast of corner of secs. 6, 7, 1, and 12, corner of wire fence, 325 feet north of Great Northern Railway (corner stake not found); iron post stamped "1387 Minnesota".....	1,387.210

BUENA VISTA QUADRANGLE.

Bemidji along Minneapolis, Red Lake & Manitoba Railway to Red Lake (portion of line).

Marsh flag station, 27 feet east of platform, 40 feet east of center of track, directly opposite flag station signboard, 80 feet north of switch stand at south end of siding; iron post stamped "1402 Minnesota".....	1,401.922
Werner flag station (Campbell Lake), 50 feet east of center of track and opposite station platform, 150 feet south of road crossing; iron post stamped "1371 Minnesota".....	1,371.579
Campbell Lake; water surface, October 19, 1907.....	1,354.7
Puposky station, 275 feet southeast of, at northeast corner of block 13, Puposky town site, in exact position of corner stake, 180 feet east of railroad track and in front of house of A. E. Hodgson; iron post stamped "1368 Minnesota".....	1,367.972
Mud Lake; water surface, October 27, 1907.....	1,354.8
T. 149 N., R. 33 W., corner of secs. 15, 16, 21, and 22, 65 feet east of railroad track, 70 feet north of center of platform at Neeley siding flag station; iron post stamped "1382 Minnesota." (Exact corner not found, but location is close according to bearing trees).....	1,382.189
Nebish station, 0.4 mile north of, 365 feet north of switch stand at point of spur south to station, 50 feet west of center of track, on rise of ground about level with track, in front of buildings of John Lauk in NW. $\frac{1}{4}$ sec. 27; iron post stamped "1351 Minnesota".....	1,350.874
Nebish Lake; water surface, October 23, 1907.....	1,354.2
Nebish station, 4.33 miles north of, 2,000 feet north of milepost 29, at south end of cut near old abandoned log camp, 28 feet west of center of tracks and 0.6 foot lower than top of rail, on steep side hill, probably in NE. $\frac{1}{4}$ sec. 8; iron post stamped "1274 Minnesota".....	1,274.361
Redby station, 0.4 mile south of, 460 feet south of roundhouse and opposite switch stand, at south end of Y, 60 feet west of center of track and 2.5 feet lower than top of rail; iron post stamped "1229 Minnesota".....	1,229.261
Red Lake; water surface, October 25, 1907.....	1,176.2

Redby around east end of Red Lake via Quiring, Foy, and Shotley to Tamaraek River (portion of line).

T. 151 N., R. 32 W., sec. 30, near south boundary and approximately 0.25 mile west of southeast corner of, 500 feet east of Hay Creek, at abandoned lumber camp, in open grassy land, 150 feet south of largest log building in camp just on north side of an east-west log fence, in line with a log fence running south, 3 feet north of bars through fence; iron post stamped "1221 Minnesota".....	1,221.556
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T. 151 N., R. 32 W., northeast corner sec. 27, 0.12 mile south of section corner, 250 feet west of section line, inside of yard fence at residence of D. W. Carter (Quiring post office), 40 feet south of east end of house; iron post stamped "1202 Minnesota".....	Feet. 1, 201. 920
Tps. 151 and 152 N., R. 32 W., corner of secs. 2, 3, 34, and 35, in position of corner stake in low swampy ground, 950 feet north of Cormorant Creek; iron post stamped "1179 Minnesota".....	1, 178. 961
NOTE.—This post is liable to settlement as it settled $\frac{1}{4}$ inch under two blows with iron bar after being well tamped and set. Ground is soft.	
T. 152 N., R. 32 W., SE. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 27, Battle River post office, residence of Joseph Peronie, 3.5 feet south and 3 feet east of southwest corner of store, 160 feet east of Indian reservation line; iron post stamped "1188".	1, 187. 901
T. 152 N., R. 31 W., 43 feet N. 27° E. (magnetic bearing) from southwest corner sec. 18, about 350 feet north of Saum post office and store; iron post stamped "1192 Minnesota".....	1, 192. 729
T. 152 N., R. 31 W., 225 feet N. 45° W. (magnetic bearing) from quarter corner between secs. 6 and 7, 48 feet south of front of house of John Carlson (Foy post office), 4 feet south of yard fence; iron post stamped "1199 Minnesota".....	1, 198. 869

OTTO QUADRANGLE.

Redby around east end of Red Lake via Quiring, Foy, and Shotley to Tamarack River (portion of line).

T. 153 N., R. 31 W., corner of secs. 19, 20, 29, and 30 (exact position of corner stake, which was lying on ground, could not be determined, but post must be within 3 or 4 feet of corner); iron post stamped "1212 Minnesota".....	1, 212. 015
T. 153 N., R. 31 W., 22 feet northwest of corner of secs. 9, 10, 15, and 16, 10 feet northwest of oak bearing tree which is 2 feet in diameter; iron post stamped "1183 Minnesota".....	1, 183. 542
T. 154 N., R. 31 W., sec. 36, 30 feet west of range line on bank of lake, 125 feet north of schoolhouse and in line with northeast side of building, about 400 feet southwest of Domaas post office; iron post stamped "1183 Minnesota".....	1, 183. 566
T. 154 N., R. 30 E., NE. $\frac{1}{4}$ sec. 8, on north bank of Tamarack River, near its mouth, 70 feet north of river bank, 15 feet east of an oak tree which is most southerly on first ridge from beach, 28 feet north of an old log cabin; iron post stamped "1183 Minnesota".....	1, 183. 035
T. 155 N., R. 31 W., SE. $\frac{1}{4}$ sec. 36, 500 or 600 feet north of Red Lake, 150 feet west of Moose Creek, on firm ground in birch and balsam timber, 20 feet east of small log cabin; iron post stamped "1182 Minnesota".....	1, 182. 792

The elevations in the following list were obtained as the result of primary leveling in 1908 by A. P. Meade, jr., and Paul Funderhide.

BUENA VISTA QUADRANGLE.

Papooky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (portion of line).

T. 149 N., R. 34 W., Fowlds station, road crossing at, foot of telephone pole on west side of track; iron post marked "1391".....	Feet. 1, 391. 611
T. 149 N., R. 34 W., sec. 32; water surface of lake.....	1, 372
T. 149 N., R. 35 W., sec. 35; water surface of Sandy Lake.....	1, 354

BAGLEY QUADRANGLE.**Puposky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (portion of line).**

T. 148 N., R. 35 W., northeast corner of sec. 4, 300 feet west of (Aure post office); iron post stamped "1420".....	Feet. 1, 420. 510
T. 148 N., R. 36 W., NW. $\frac{1}{4}$ sec. 2, 300 feet east of cabin and 600 feet west of barn; iron post stamped "1483".....	1, 483. 082
T. 149 N., R. 36 W., 700 feet south of quarter corner between secs. 32 and 33; iron post stamped "1472".....	1, 472. 275
T. 149 N., R. 37 W., corner of secs. 22, 23, 26, and 27, at northeast fence corner of crossroads; iron post stamped "1331".....	1, 331. 109
Ruffy Brook; water surface near last-mentioned post.....	1, 314. 9
Ruffy Brook; water surface in sec. 15.....	1, 293
T. 149 N., R. 37 W., near corner of secs. 4, 5, 8, and 9, one-quarter mile north of Leon post office, at northwest corner of crossroads, at foot of fence and opposite schoolhouse; iron post stamped "1241".....	1, 241. 100
Ruffy Brook; water surface in sec. 5.....	1, 231
T. 149 N., R. 38 W., Lost River, water surface on line between secs. 1 and 12.....	1, 227
T. 150 N., R. 38 W.; water surface of lake in sec. 35.....	1, 193

FOSSTON QUADRANGLE.**Puposky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (portion of line).**

T. 150 N., R. 38 W., Winsor post office, near quarter corner between secs. 27 and 28, at southeast fence corner opposite store and at road forks; iron post stamped "1215".....	1, 215. 453
T. 150 N., R. 39 W., Gully post office, SW. $\frac{1}{4}$ sec. 26, at fence corner, forks of road, opposite store; iron post stamped "1223".....	1, 223. 689
T. 150 N., R. 40 W., sec. 9, Espetvet post office, at northeast corner of store building; iron post stamped "1150".....	1, 150. 477
Lost River; water surface near Espetvet.....	1, 142
T. 151 N., R. 40 W., near corner of secs. 3, 4, 9, and 10, at fence corner in sec. 10; iron post stamped "1161".....	1, 161. 498
T. 152 N., R. 40 W., sec. 33, water surface of Clear Water River at bridge..	1, 151
T. 152 N., R. 40 W., near corner of secs. 8, 9, 17, and 16, one-half mile north of Rhoda post office, at fence corner; iron post stamped "1158".....	1, 158. 816

Ashby, Barrett, Battle Lake, Chokio, Fergus Falls, Herman, Morris, Rothsay, Underwood, and Wendell quadrangles.

GRANT, OTTERTAIL, AND STEVENS COUNTIES.

The elevations in the following list were determined by primary leveling extended from the precise-level line of the Coast and Geodetic Survey which crosses the Barrett, Herman, Ashby, Wendell, and Fergus Falls quadrangles. The work of 1910 is a continuation of that done in 1909. The elevations accord with the 1907 adjustment.

The leveling was done as follows: In Morris quadrangle, in 1909, by G. E. Halstead; in Barrett and Herman quadrangles, in 1909, by C. R. Beckler; in Chokio quadrangle, in 1909, by G. E. Halstead, and in 1910, by E. C. Bibbee; in Ashby quadrangle, in 1910, by J. M. Ray; in Wendell quadrangle by C. R. Beckler in 1909 and by J. M. Ray and E. C. Bibbee in 1910; and in Fergus Falls, Rothsay, Underwood, and Battle Lake quadrangles by J. M. Ray and E. C. Bibbee in 1910.

WENDELL QUADRANGLE.

Point 2.5 miles west of Hereford, south to sec. 10, T. 129 N., R. 44 W.

Hereford, 2.5 miles west of, 30 feet south of Great Northern Railroad, 0.5 mile west of grade crossing at the right-of-way line, west side of private road crossing; iron pipe (Coast and Geodetic Survey bench mark)..... 1, 030. 100

Point 2.5 miles west of Hereford along highway, west 2.5 miles, thence north 15.5 miles, thence east 1 mile, thence north 2 miles, thence east to point 0.7 mile east of Dayton Dam, thence southwest to sec. 1, T. 131 N., R. 44 W., thence south 10.5 miles and east to Wendell, thence south 1.5 miles.

T. 130 N., R. 44 W., in southeast corner of sec. 31, 15 feet west and 25 feet north of center of crossroads; iron post stamped "1013"..... 1, 013. 398
 T. 130 N., R. 44 W., in southeast corner of sec. 18, 50 feet west by 35 feet north of center of crossroads; iron post stamped "1019"..... 1, 019. 444
 T. 131 N., R. 44 W., in southeast corner of sec. 31, 30 feet north by 30 feet west of center of crossroads; iron post stamped "1028"..... 1, 028. 391
 T. 131 N., R. 44 W., in southwest corner of sec. 17, 25 feet north by 25 feet east of center of crossroads; iron post stamped "1044"..... 1, 043. 555
 T. 132 N., R. 44 W., southeast corner of sec. 31, 15 feet north by 35 feet west of center of T road south; iron post stamped "1049"..... 1, 048. 755
 T. 132 N., R. 44 W., in southeast corner of sec. 20, 20 feet west by 25 feet north of center of crossroads, in southeast corner of school lot; iron post stamped "1061"..... 1, 061. 286
 T. 132 N., R. 44 W., in southeast corner of sec. 23, 30 feet west by 20 feet north of center of crossroads; iron post stamped "1088"..... 1, 088. 433
 Dayton dam, top of iron bolt in concrete masonry work, east end and north side of dam, third bolt from east end..... 1, 112. 543
 T. 132 N., R. 43 W., at quarter corner north side of sec. 32, 60 feet northwest of residence of C. A. Littsen, 150 feet southwest of schoolhouse at T road north; iron post stamped "1171"..... 1, 170. 845
 T. 131 N., R. 44 W., at quarter corner east side of sec. 1, 30 feet west by 30 feet south of center of intersection of T road south; iron post stamped "1126"..... 1, 126. 010
 T. 131 N., R. 43 W., in southwest corner of sec. 19, 35 feet north by 20 feet east of center of crossroads; iron post stamped "1114"..... 1, 114. 136
 T. 131 N., R. 43 W., in southwest corner of sec. 30, 240 feet southwest of farm house, in base of small boxelder tree; spike..... 1, 130. 95
 T. 130 N., R. 43 W., in southwest corner of sec. 6, 25 feet east by 25 feet north of center of crossroads; iron post stamped "1124"..... 1, 123. 901
 T. 130 N., R. 43 W., in northwest corner of sec. 30, 20 feet west of center of intersection of T road east, on east side of Ash Lake; iron post stamped "1080"..... 1, 080. 025
 Wendell, in northwest corner of public school lot, 100 feet northwest of public school building; iron post stamped "1151"..... 1, 150. 768
 Wendell, 1.8 kilometers south of, 3.5 kilometers east of Hereford, 25 meters north of railroad, at right of way, west highway line, and southeast corner of meadow belonging to Arthur Smith; iron post (Coast and Geodetic Survey bench mark B-2)..... 1, 130. 114

Point 1.2 miles south of Wendell east along highway 2 miles, thence north 10.5 miles.

T. 130 N., R. 43 W., northeast corner of sec. 34, 25 feet south by 25 feet west of center of crossroads; iron post stamped "1118"..... 1, 118. 131
 T. 130 N., R. 43 W., in northwest corner of sec. 14, 25 feet south by 25 feet east of center of crossroads; iron post stamped "1148"..... 1, 147. 629

T. 131 N., R. 43 W., northeast corner of sec. 34, 30 feet south by 20 feet west of center of crossroads; iron post stamped "1146".....	Feet. 1, 146. 191
T. 131 N., R. 43 W., in northwest corner of sec. 14, 15 feet east by 30 feet south of center of crossroads; iron post stamped "1192".....	1, 192. 331

Southeast corner of sec. 20, T. 132 N., R. 44 W., north along highways to southwest corner of sec. 10, T. 132 N., R. 44 W.

T. 132 N., R. 44 W., in southeast corner of sec. 20, 20 feet west by 25 feet north of center of crossroads, in southeast corner of school lot; iron post stamped "1061".....	1, 061. 286
T. 132 N., R. 44 W., 30 feet south by 25 feet east of southwest corner of sec. 10; iron post stamped "1094".....	1, 093. 969

BARRETT QUADRANGLE.

Thorsborg south along highway to county line at southeast corner of sec. 1, T. 126 N., R. 42 W.

Thorsborg, Grant County, Sanford Township, on NW. $\frac{1}{4}$ sec. 13, 110 meters north and 60 meters west of railway station, at southwest corner of pasture belonging to Henry Lajord, at northeast corner of crossroads, 10 meters east and 5 meters north of line of travel; iron pipe (Coast and Geodetic Survey bench mark V-1).....	1, 204. 971
T. 129 N., R. 42 W., in southeast corner of SW. $\frac{1}{4}$ sec. 24, at northwest corner of crossroads, 5 feet west of line of travel, on granite boulder; chiseled square, marked "1247".....	1, 246. 90
T. 129 N., R. 42 W., in southwest corner of SE. $\frac{1}{4}$ sec. 36, 25 feet north by 25 feet east of center of crossroads; iron post stamped "1212".....	1, 212. 460
Barrett, in front of station; top of east rail; marked on face of platform "1168.0".....	1, 168. 0
Barrett, in south end of west doorsill (sandstone) of the Barrett public school building; aluminum tablet stamped "1168".....	1, 168. 300
T. 128 N., R. 41 W., in northwest corner of sec. 31, 25 feet north by 25 feet east of center of intersection of T road east; iron post stamped "1179".....	1, 179. 380
T. 127 N., R. 41 W., in northwest corner of sec. 6, at crossroads, top of iron section corner post.....	1, 175. 15
T. 127 N., R. 41 W., in northwest corner of sec. 18, 30 feet east by 30 feet south of center of line of travel; iron post stamped "1183".....	1, 183. 421
T. 127 N., R. 41 W., in northwest corner of sec. 31, 40 feet east by 25 feet south of center of T road east; iron post stamped "1178".....	1, 178. 247
Southeast corner of sec. 32, T. 127 N., R. 41 W., east along county line road 3 miles, thence north along highway to Erdahl.	
T. 127 N., R. 41 W., in southeast corner of sec. 32, 30 feet west by 20 feet south of center of crossroads; iron post stamped "1133".....	1, 232. 960
T. 127 N., R. 41 W., in southeast corner of sec. 35, 25 feet west by 25 feet north of crossroads; iron post stamped "1232".....	1, 232. 121
T. 127 N., R. 41 W., in center of south side of SE. $\frac{1}{4}$ of sec. 14, 25 feet west by 25 feet north of center of T road west; iron post stamped "1193".....	1, 193. 484
Hoffman, in south end of west doorsill (sandstone) of the Hoffman public school building; aluminum tablet stamped "1256".....	1, 255. 901
Hoffman, 1.4 miles north of, on west side of road, 10 feet from center of line of travel; point on granite boulder.....	1, 233. 79
T. 128 N., R. 41 W., in northeast corner of SE. $\frac{1}{4}$ sec. 26, 55 feet south of center of line of travel at right angle in road; iron post stamped "1234".....	1, 234. 423
T. 128 N., R. 41 W., in northwest corner of sec. 14, 20 feet east by 20 feet south of center of T road east; iron post stamped "1252".....	1, 251. 993

T. 129 N., R. 41 W., in southwest corner of sec. 25, 35 feet east by 30 feet north of center of T road east; iron post stamped "1236".....	Feet. 1, 235. 921
Erdahl (Cork P. O.), Grant County, on land of T. Tobiasson, of Ashby, at the east line of main street, 58 meters south of railway, at a point 70 meters west of station, 7 meters east of line of travel, 17 meters northeast of frame store of A. J. Okelgren, 24 meters south of grain elevator; iron post (Coast and Geodetic Survey bench mark U-1).....	1, 266. 757
Southwest corner of sec. 19, T. 127 N., R. 41 W., west along highway 1.5 miles, thence south 1 mile, thence west 3 miles, thence north to Elbow Lake.	
T. 127 N., R. 42 W., near quarter corner north side of sec. 26, on foundation stone of schoolhouse (district No. 16) at northeast corner; chiseled square.....	1, 188. 07
T. 127 N., R. 42 W., in northeast corner of sec. 34, 35 feet west by 35 feet south of center of crossroads; iron post stamped "1197".....	1, 196. 775
T. 127 N., R. 42 W., in southeast corner of sec. 30, in southeast corner of school lot, 30 feet west by 30 feet north of center of crossroads; iron post stamped "1147".....	1, 146. 592
T. 127 N., R. 42 W., in northwest corner of sec. 20, 35 feet south by 38 feet east of center of crossroads, on stone boulder; chiseled square.....	1, 152. 97
T. 127 N., R. 42 W., 40 feet west by 25 feet south of center of crossroads; iron post stamped "1146".....	1, 145. 547
T. 128 N., R. 42 W., in northwest corner of sec. 32, 30 feet east by 20 feet south of center of crossroads; iron post stamped "1156".....	1, 156. 075
T. 128 N., R. 42 W., in northeast corner of sec. 18, 25 feet west by 20 feet south of center of crossroads, near Huset Church; iron post stamped "1178".....	1, 177. 367
T. 129 N., R. 42 W., in southeast corner of sec. 29, 30 feet west by 20 feet north of center of crossroads; iron post stamped "1162".....	1, 162. 034
Elbow Lake, Grant County, in the north end of south doorsill (sandstone) of the First National Bank building, 1.8 meters north of south side of building, 0.1 meter from east of front edge of sill, 0.08 meter south of brickwork, 0.4 meter above sidewalk, 0.5 meter north of center of doorway; red metal disk (Coast and Geodetic Survey bench mark X-1).....	1, 213. 903

HERMAN QUADRANGLE.

Wendell south along highway to northwest corner of sec. 4, T. 128 N., R. 43 W., thence east to sec. 5, T. 128 N., R. 42 W.

T. 129 N., R. 42 W., in northwest corner of sec. 28, 20 feet south by 30 feet east of center of crossroads; iron post stamped "1106".....	1, 106. 155
T. 128 N., R. 43 W., in northwest corner of sec. 2, in southeast corner of bridge abutment, bridge spanning Mustinka River; aluminum tablet stamped "1091".....	1, 091. 189
T. 129 N., R. 43 W., at northeast corner of sec. 1, on quarter line of sec. 31; monument.....	1, 161. 75

Northwest corner of sec. 4, T. 128 N., R. 43 W., south along highway to southeast corner of sec. 16, T. 127 N., R. 43 W., thence east to sec. 30, T. 127 N., R. 42 W.

T. 128 N., R. 43 W., 0.2 mile south of northwest corner of sec. 9, 25 feet east of center line of travel; iron post stamped "1100".....	1, 100. 304
T. 128 N., R. 43 W., in southwest corner of sec. 8, in base of tree on west side of road, 20 feet west of center line of travel; spike.....	1, 100. 44
T. 128 N., R. 43 W., in northwest corner of SW. $\frac{1}{4}$ sec. 21, 20 feet east of center of line of travel; iron post stamped "1089".....	1, 089. 415
T. 128 N., R. 43 W., in southwest corner of sec. 22, on granite boulder at T road west; chiseled square.....	1, 107. 94

T. 127 N., R. 43 W., in northeast corner of sec. 4, 30 feet west by 15 feet south of center of crossroads; iron post stamped "1100".....	Feet. 1, 099. 881
T. 127 N., R. 43 W., in southeast corner of sec. 23, 35 feet west by 25 feet north of center of crossroads; iron post stamped "1128".....	1, 128. 226

Southeast corner of sec. 16, T. 127 N., R. 43 W., west along highway 4.5 miles, thence south to county line.

T. 127 N., R. 43 W., in sec. 21, 30 feet north by 35 feet south of respective lines of travel at road fork; iron post stamped "1093".....	1, 093. 243
T. 127 N., R. 43 W., at corner of secs. 13, 24 (T. 127 N., R. 44 W.) and secs. 18 and 19 (T. 127 N., R. 43 W.), in center of line of travel at crossroads; iron stake.....	1, 075. 44
Herman, in north end of west doorsill (sandstone) of the Grant County State Bank; aluminum tablet stamped "1076".....	1, 075. 546
Herman, in front of station; top of east rail.....	1, 074. 9

County line northwest corner of sec. 4, T. 126 N., R. 44 W., indirectly north along highway to southwest corner of sec. 10, T. 129 N., R. 44 W.

T. 126 N., R. 44 W., in northwest corner of sec. 4, 30 feet east by 25 feet south of center of crossroads; iron post stamped "1057".....	1, 057. 267
T. 127 N., R. 44 W., in southeast corner of sec. 29, on granite boulder at crossroads; chiseled square.....	1, 054. 95
T. 127 N., R. 44 W., in northwest corner of sec. 20, 30 feet south of center of intersection at T road north; iron post stamped "1046".....	1, 045. 130
T. 127 N., R. 44 W., in northeast corner of sec. 7, 100 feet south by 50 feet west of center of crossroads; on granite boulder; chiseled square.....	1, 035. 73
T. 127 N., R. 44 W., in northwest corner of sec. 5, 30 feet south by 30 feet east of center of crossroads; iron post stamped "1032".....	1, 031. 790
T. 128 N., R. 44 W., in southwest corner of sec. 16, 25 feet east by 35 feet north of center of crossroads, 840 feet east of Great Northern Railway, about 1.5 miles northwest of Norcross; iron post stamped "1029".....	1, 028. 564
T. 129 N., R. 44 W., in southeast corner of sec. 33, 50 feet north by 25 feet west of center of T road north; iron post stamped "1024".....	1, 023. 378
T. 129 N., R. 44 W., in northwest corner of sec. 22, 40 feet south by 30 feet east of center of crossroads; iron post stamped "1025".....	1, 024. 807

Herman north along highway 6 miles, thence west to point 1.5 miles northwest of Norcross.

T. 127 N., R. 44 W., in northeast corner of sec. 2, in base of cottonwood tree on west side of Y road; spike.....	1, 073. 56
T. 127 N., R. 44 W., in northwest corner of sec. 1, 20 feet east by 20 feet south of center of crossroads; iron post stamped "1056".....	1, 056. 035
T. 128 N., R. 44 W., in southeast corner of sec. 14, 35 feet north by 35 feet west of center of crossroads; iron post stamped "1052".....	1, 051. 548
T. 128 N., R. 44 W., in southwest corner of sec. 16, 35 feet north by 25 feet east of center of crossroads; iron post stamped "1029".....	1, 028. 564

MORRIS QUADRANGLE.

Sec. 1, T. 126 N., R. 42 W., south along highway and Great Northern Railway to southwest corner of sec. 25, T. 124 N., R. 42 W., thence east along highway 6 miles and north to county line.

T. 126 N., R. 41 W., in northwest corner of sec. 19, 23 feet east of center line of travel at road intersection, 3 feet south of east-west fence line; iron post stamped "1153".....	1, 153. 343
T. 126 N., R. 42 W., in southeast corner of sec. 25, 36 feet north by 9 feet west of center of road intersection, in base of 12-inch poplar tree; spike..	1, 121. 56

T. 125 N., R. 41 W., in northwest corner of sec. 6, 18 feet south by 17 feet east of center of crossroads; iron post stamped "1129".....	Feet. 1, 129. 316
T. 125 N., R. 42 W., northeast of center of sec. 24, 91 feet south of east-west fence line, 15 feet east of center of line of travel, 40 feet southeast of sign-post 8 inches in diameter; iron post stamped "1138".....	1, 137. 461
T. 125 N., R. 42 W., southwest corner of sec. 24, at base of fence post at jog in road to west, on $\frac{1}{4}$ -inch bump on bowlder (5 feet around).....	1, 138. 57
T. 125 N., R. 42 W., in southeast corner of NE. $\frac{1}{4}$ sec. 35, in base of telegraph pole at road intersection and railroad crossing, 15 feet south of fence line, 50 feet northwest of railroad crossing; three nails.....	1, 128. 24
Morris, southwest corner of Citizens Bank, east of entrance, in water table; aluminum tablet stamped "1138".....	1, 137. 926
T. 124 N., R. 42 W., in southwest corner of sec. 13, 12 feet east by 11 feet north of center of road intersection; iron post stamped "1078".....	1, 078. 148
T. 124 N., R. 42 W., in southwest corner of sec. 25, 32 feet east by 46 feet north of center of crossroads; iron post stamped "1125".....	1, 124. 441
T. 124 N., R. 41 W., in southeast corner of SW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 29, 20 feet north by 30 feet west of center of crossroads; iron post stamped "1163".....	1, 163. 181
T. 124 N., R. 41 W., in northeast corner of NW. $\frac{1}{4}$ sec. 35, 18 feet west by 30 feet south of center of road intersection, 0.5 mile east by 1 mile north of Hancock; iron post stamped "1161".....	1, 160. 622
T. 124 N., R. 41 W., in southeast corner of sec. 10, 35 feet west by 25 feet north of center of intersection, 10 feet west of north-south fence line; iron post stamped "1175".....	1, 175. 066
T. 125 N., R. 41 W., in southeast corner of sec. 34, 20 feet north of red granary, 120 feet east by 53 feet north of fence line, on 24-inch rock; $\frac{1}{4}$ -inch knob.....	1, 149. 02
T. 125 N., R. 41 W., in northwest corner of sec. 35, 358 feet south of section line, 16 feet east of center of road, 9 feet southwest of telephone pole; iron post stamped "1150".....	1, 149. 928
T. 125 N., R. 41 W., in southeast corner of NE. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 14, 15 feet west by 100 feet north of center of road intersection, 70 feet north of sign; iron post stamped "1158".....	1, 158. 042
T. 125 N., R. 41 W., in southwest corner of sec. 1, 16 feet north by 51 feet east of center of road at intersection; iron post stamped "1173".....	1, 172. 455
T. 126 N., R. 41 W., in southeast corner of sec. 26, 90 feet north by 32 feet west of center of road, on north part of 18-inch by 28-inch rock; 1-inch knob.....	1, 183. 76
T. 126 N., R. 41 W., in southeast corner of sec. 23, 10 feet west by 70 feet north of center of road, on 15-foot by 28-inch rock; 1-inch knob.....	1, 176. 77
T. 126 N., R. 41 W., in northeast corner of sec. 23, 33 feet west by 45 feet south of center of crossroads; iron post stamped "1170".....	1, 169. 755
T. 127 N., R. 41 W., in southeast corner of sec. 35, 25 feet west by 25 feet north of center of crossroads; iron post stamped "1232".....	1, 232. 121
Southwest corner of sec. 13, T. 124 N., R. 42 W., west, south, and west along highway to southwest corner of sec. 19, T. 124 N., R. 42 W., thence northeast, north, and west to southwest corner of sec. 31, T. 125 N., R. 42 W.	
T. 124 N., R. 42 W., in northwest corner of sec. 27, 25 feet south by 25 feet east of center of crossroads, in top of concrete post; aluminum tablet stamped "1122".....	1, 121. 824
T. 124 N., R. 42 W., in southwest corner of sec. 19, 25 feet east by 35 feet north of center of crossroads, in top of concrete post; aluminum tablet stamped "1158".....	1, 157. 450

T. 124 N., R. 42 W., in southeast corner of sec. 7, on north side of east abutment of bridge; 1-inch knob.....	Feet. 1, 081. 11
T. 124 N., R. 42 W., in southeast corner of sec. 6, 40 feet north by 22 feet west of center of road intersection, in top of concrete post; aluminum tablet stamped "1118".....	1, 117. 554

Southeast corner of sec. 12, T. 126 N., R. 43 W., east along highway 1 mile, thence north to county line.

T. 126 N., R. 42 W., in northwest corner of SW. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 8, 33 feet east of section line, in base of 5-inch tree; two spikes.....	1, 148. 79
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CHOKIO QUADRANGLE.

Southwest corner of sec. 2, T. 126 N., R. 44 W., west to sec. 4, T. 126 N., R. 44 W.

T. 126 N., R. 44 W., in southwest corner of sec. 2, 35 feet east by 35 feet north of center of crossroads, 320 feet northeast of schoolhouse; iron post stamped "1080".....	1, 079. 870
T. 126 N., R. 44 W., in southeast corner of sec. 4, 220 feet northwest of section corner, in base of cottonwood tree 8 inches in diameter; spike.....	1, 076. 48

Northeast corner of sec. 36, T. 125 N., R. 43 W., north along highway to southeast corner of sec. 12, T. 126 N., R. 43 W.

T. 125 N., R. 43 W., in northeast corner of sec. 36, 45 feet west by 30 feet south of 4-inch by 12-inch rock near corner, 60 feet north of center of road; iron post stamped "1110".....	1, 110. 288
T. 125 N., R. 42 W., in northwest corner of sec. 18, 30 feet east by 65 feet south of center of crossroads, in top of concrete post; aluminum tablet stamped "1105".....	1, 104. 981
Donnelly, 1 foot south of joint of east rails, on top of rail, main line opposite signal in front of station.....	1, 129. 1
Donnelly, at street crossing, 95 feet south of post office, west side of Main Street, at northeast entrance of park, in top of concrete post; aluminum tablet stamped "1131".....	1, 130. 766
T. 126 N., R. 43 W., in southeast corner of sec. 12, 40 feet west by 20 feet north of center of crossroads, 210 feet west of church, in top of concrete post; aluminum tablet stamped "1144".....	1, 144. 431

Southwest corner of sec. 19, T. 124 N., R. 43 W., west along highway 3 miles, thence north to Alberta.

T. 124 N., R. 43 W., in northwest corner of NE. $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 25, 3 feet from trunk of tree and 35 feet west of center line of travel at jog around lake, in root of 32-inch tree; spike.....	1, 144. 26
T. 124 N., R. 43 W., in southwest corner of sec. 22, 25 feet north by 25 feet east of center of crossroads, in top of concrete post; aluminum tablet stamped "1149".....	1, 149. 009
T. 124 N., R. 43 W., in northwest corner of sec. 10, 40 feet east by 30 feet south of center of road intersection, 0.25 mile west of Alberta, in top of concrete post; aluminum tablet stamped "1109".....	1, 108. 810

Southwest corner of sec. 19, T. 124 N., R. 43 W., to northwest corner of sec. 4, T. 126 N., R. 44 W.

T. 124 N., R. 42 W., in southwest corner of sec. 19, 25 feet east by 35 feet north of center line of travel at crossroads; in top of concrete post; aluminum tablet stamped "1158".....	1, 157. 450
T. 124 N., R. 43 W., northwest corner of NE. $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 25, 3 feet from trunk of tree and 35 feet west of center line of travel at jog around lake; nail in root of 32-inch tree.....	1, 144. 26

T. 124 N., R. 43 W., southwest corner of sec. 22, 25 feet north by 25 feet east of center line of travel at crossroads, in top of concrete post; aluminum tablet stamped "1149"	Feet. 1, 148. 991
T. 124 N., R. 43 W., near northwest corner of sec. 32; iron post stamped "1156"	1, 155. 869
T. 124 N., R. 44 W., near southeast corner of sec. 25, nailhead in west end of small bridge painted white	1, 152. 60
T. 124 N., R. 44 W., southwest corner of sec. 26, in top of concrete post; aluminum tablet stamped "1157"	1, 157. 137
T. 124 N., R. 44 W., near southwest corner of sec. 29, in top of concrete post; aluminum tablet stamped "1163"	1, 163. 412
T. 124 N., R. 44 W., 200 feet northeast of southwest corner of sec. 20; chiseled square on top of large stone	1, 158. 48
T. 124 N., R. 44 W., near southeast corner of sec. 7; iron post stamped "1143"	1, 142. 967
T. 125 N., R. 44 W., near southwest corner of sec. 32; iron post stamped "1124"	1, 124. 229
T. 125 N., R. 44 W., near southeast corner of sec. 18; iron post stamped "1102"	1, 102. 148
T. 125 N., R. 44 W., northeast corner of sec. 6; iron post stamped "1073"	1, 072. 808
T. 126 N., R. 44 W., near northeast corner of sec. 19; iron post stamped "1064"	1, 064. 009
T. 126 N., R. 44 W., near northwest corner of sec. 4, 30 feet east by 25 feet south of center of crossroads; iron post stamped "1057"	1, 057. 267
Southwest corner of sec. 2, T. 126 N., R. 44 W., to southwest corner of sec. 22, T. 124 N., R. 43 W.	
T. 126 N., R. 44 W., southwest corner of sec. 2, 35 feet east by 35 feet north of center line of travel at crossroads, 320 feet northeast of schoolhouse; iron post stamped "1080"	1, 079. 870
T. 126 N., R. 43 W., near northwest corner of sec. 7, in top of concrete post; aluminum tablet stamped "1089"	1, 089. 304
T. 126 N., R. 43 W., southwest corner of sec. 7; top of iron pipe	1, 090. 829
T. 126 N., R. 43 W., near northwest corner of sec. 20, in top of concrete post; aluminum tablet stamped "1089"	1, 088. 948
T. 126 N., R. 43 W., near northeast corner of sec. 32, in top of concrete post; aluminum tablet stamped "1110"	1, 110. 298
T. 125 N., R. 43 W., near southeast corner of sec. 8; iron post stamped "1122"	1, 122. 381
T. 125 N., R. 43 W., near corner of secs. 16, 17, 20, and 21; chiseled square on stone	1, 124. 59
T. 125 N., R. 43 W., 1,320 feet north of northwest corner of sec. 28; chiseled square on large stone	1, 123. 32
T. 125 N., R. 43 W., near center of SE. $\frac{1}{4}$ sec. 32, in top of concrete post at tower; aluminum tablet stamped "1123"	1, 122. 726
T. 124 N., R. 43 W., in northwest corner of sec. 10, 30 feet south by 40 feet east of center line of travel at road intersection, 0.25 mile west of Alberta, in top of concrete post; aluminum tablet stamped "1109"	1, 108. 810

ASHBY QUADRANGLE.**Elbow Lake north along highways to Parkdale.**

Elbow Lake, in north end of sandstone doorsill of First National Bank Building, 1.8 meters north of south side of building, 0.4 meter above sidewalk, 0.1 meter east of front edge of sill, 0.8 meter south of brickwork, 0.5 meter north of center of doorway; red metal disk (Coast and Geodetic Survey bench mark X-1)	1, 213. 903
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T. 130 N., R. 42 W., northeast corner of sec. 31, 0.2 mile south of Woesner's house, 2 feet from fence line; iron post stamped "1179"	Feet. 1, 179. 091
T. 130 N., R. 42 W., southeast corner of sec. 7, 0.5 mile west of Four-Mile Lake, 3 feet south of fence corner; iron post stamped "1177"	1, 177. 087
Ten-Mile Lake, 0.2 mile west of, 150 feet east of E. T. Reesburg's Lane, on south side of road, 2 feet north of fence line; iron post stamped "1236" ..	1, 235. 487
Ten-Mile Lake, water surface, July 21, 1910	1, 198. 5
T. 131 N., R. 42 W., near southeast corner of sec. 16, 0.2 mile east of north end of Ten-Mile Lake, 1,000 feet northwest of S. Fossen's house, 3 feet inside of fence and 4 feet on west side of road, on summit; iron post stamped "1229"	1, 229. 269
Parkdale Mill, 0.4 mile north of, southwest corner of sec. 33, T. 132 N., R. 42 W., 3 feet east of lane to Hans Rynn's house; iron post stamped "1259"	1, 258. 674
Parkdale, between fifteenth and sixteenth telegraph poles west of milepost 181, on public road, two-thirds meter south of right-of-way fence, in stone post lettered "U. S. B. M."; copper bolt (Coast and Geodetic Survey bench mark V-3)	1, 233. 511
Point 2 miles south of Swan Lake church north and east along highways to point 1.6 miles northeast of old Tordenskj post office, thence south along highways to point 1.5 miles northwest of Ashby.	
Swan Lake Church, 75 feet northeast of, 6 miles southeast of Fergus Falls, 2 feet east of fence; iron post stamped "1313"	1, 313. 362
T. 132 N., R. 42 W., southeast corner of sec. 14, 700 feet southeast of P. Johnson's house, 30 feet west by 10 feet north of corner, near fence line; iron post stamped "1345"	1, 344. 912
Tordenskj post office (old), 0.9 mile northeast of, 120 feet north of mail box near forks of road to J. S. Torgenson's, 10 feet east of road; iron post stamped "1295"	1, 295. 020
T. 131 N., R. 41 W., east quarter corner of sec. 7, 2 miles east of Dalton, 100 feet northeast of Synod Church; iron post stamped "1358"	1, 358. 237
T. 131 N., R. 41 W., southeast corner of sec. 29, 3 miles northwest of Ashby, 60 feet northwest of A. L. Anderson's mail box, 3 feet east of fence; iron post stamped "1326"	1, 326. 246
Bench mark at southeast corner of sec. 29, T. 131 N., R. 41 W., south along highways to Thorsborg.	
T. 130 N., R. 41 W., southwest corner of sec. 31, 4 miles northwest of Ashby, 2 feet west of fence; iron post stamped "1265"	1, 264. 891
T. 130 N., R. 42 W., northeast corner of sec. 24, at old Pomme de Terre post office, 400 feet south of crossroads, 3 feet east of fence; iron post stamped "1248"	1, 247. 831
T. 130 N., R. 42 W., northeast corner of sec. 35, 4 miles north of Thorsborg, corner of land owned by A. Woessner, 3 feet east of fence; iron post stamped "1199 Minn"	1, 198. 724
Thorsborg, in southeast quarter of sec. 13, 110 meters north by 60 meters west of station, at southwest corner of pasture belonging to Henry Lajord, at northeast corner of crossroads, 10 meters east by 5 meters north of line of travel; iron post (Coast and Geodetic Survey bench mark V-1)	1, 204. 971
Erdahl north along highways to Ashby.	
Erdahl, on land of T. Tokiason, of Ashby, at east line of Main Street, 58 meters south of railway, at point 70 meters west of station, 7 meters east of line of travel, 17 meters northeast of frame store of A. J. Okelgren, 24 meters south of a grain elevator; iron post (Coast and Geodetic Survey bench mark U-1)	1, 266. 757

Erdahl, 3 miles north of, 250 feet west of K. E. Johnson's mail box, 30 feet north of road, inside of fence, near northeast corner of sec. 24. T. 130 N., R. 41 W.; iron post stamped "1225"	Feet. 1, 224.767
Pelican Lake; water surface, August 24, 1910.....	1, 214.3
T. 130 N., R. 41 W., northeast corner of sec. 21, 2.5 miles south of Ashby, near telephone pole; iron post stamped "1250"	1, 249.985
Ashby, at southwest corner of Melby and street one block south of Main Street, at northeast corner of property owned by J. Madland, 3 meters from property line; stone post lettered "U. S. B. M." (Coast and Geodetic Survey bench mark P-3).....	1, 295.682

Ashby north and west along highways to point near old Tordenskj post office.

Ashby, southwest corner of city park, northeast corner of Larson Street and street one block south of Main Street, 4 feet from sidewalk; iron post stamped "1295 Minn"	1, 295.134
Ashby, 3 miles northeast of, at junction of road to Eagle Lake, 20 feet north of signpost reading "Eagle Lake 4 miles," at corner of Soren Knudson's land; iron post stamped "1281 Minn"	1, 281.277
T. 131 N., R. 41 W., northwest corner of sec. 12, 6.8 miles northeast of Ashby, 30 feet north of circular mail box; iron post stamped "1318"	1, 317.947
T. 132 N., R. 41 W., 0.2 mile west of southeast corner of sec. 25, 9.3 miles north of Ashby, 60 feet northeast of signpost reading "8 miles to Battle Lake," 20 feet east of road; tack in stump painted "U. S. B. M. 1356.6" ..	1, 356.57
T. 132 N., R. 41 W., 0.5 mile east of northwest corner of sec. 25, 10.4 miles northeast of Ashby, 60 feet east of signpost at forks of road reading "Battle Lake 7 miles, Fergus Falls 17 miles," east side of north-south road; iron post stamped "1381"	1, 380.745
T. 132 N., R. 41 W., 0.2 mile west of center of sec. 27, 800 feet southeast of G. Krilvang's house, 12.9 miles north of Ashby, 20 feet north of road; iron post stamped "1282 Minn"	1, 282.108

WENDELL QUADRANGLE.

Point 1.2 miles south of Wendell along highways to north quarter corner of sec. T. 132 N., R. 43 W.

T. 130 N., R. 43 W., northeast corner of sec. 34, 25 feet south by 25 feet west of center of line of travel at crossroads; iron post stamped "1118"	1, 118.102
T. 130 N., R. 43 W., northwest corner of sec. 14, 25 feet south by 25 feet east of center of line of travel at crossroads; iron post stamped "1148"	1, 147.576
T. 131 N., R. 43 W., northeast corner of sec. 34, 30 feet south by 20 feet west of center of line of travel at crossroads; iron post stamped "1146" ..	1, 146.114
T. 131 N., R. 43 W., northwest corner of sec. 14, 15 feet east by 30 feet south of center of line of travel at crossroads; iron post stamped "1192"	1, 192.230
T. 132 N., R. 43 W., 0.2 mile north of southeast corner of sec. 35, 15 feet north of road, near fence line; iron post stamped "1256"	1, 256.161
T. 132 N., R. 43 W., north quarter corner of sec. 32, 60 feet northwest of C. A. Littson's, 150 feet southwest of schoolhouse at T road north; iron post stamped "1171"	1, 170.845

Point 2.1 miles south of Fergus Falls to point one-fourth mile south of northeast corner of sec. 27, T. 132 N., R. 43 W.

Fergus Falls, 3.8 miles southeast of, 100 feet east of slough, 50 feet east of road northwest corner of pasture owned by C. M. Anderson; iron post stamped "1170 Minn"	1, 169.687
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FERGUS FALLS QUADRANGLE.

Fergus Falls south along highways 2.5 miles.

Fergus Falls, at southeast corner of Lincoln Avenue and Mill Street, on doorstep of northern entrance of the Pickett Block (First State Bank Building), in middle of building, 10 centimeters from north edge, and 15 centimeters from east edge of step; chiseled square (Coast and Geodetic Survey bench mark Y-3).....	Feet. 1, 195. 991
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Fergus Falls north along highways to Erharts, thence east along highways to southeast corner of sec. 28, T. 135 N., R. 44 W.

Fergus Falls, 3.7 miles northeast of, near southeast corner of sec. 24, T. 133 N., R. 43 W., 30 feet south by 30 feet west of forks in road, 150 feet west of schoolhouse (district No. 80); iron post stamped "1313 Minn".....	1, 312. 578
T. 133 N., R. 42 W., northwest corner of sec. 7, 150 feet northwest of H. Holdhusen's house, 20 feet east of road; iron post stamped "1300 Minn" ..	1, 299. 930
T. 134 N., R. 43 W., southeast corner of sec. 23, 55 feet north by 10 feet west of crossroads, at edge of C. F. Ladwig's farm; iron post stamped "1354 Minn"	1, 353. 786
T. 134 N., R. 43 W., southwest corner of sec. 23, 20 feet north of W. B. Chapin's mail box; spike in silver poplar tree marked "1317.6"	1. 317. 61
T. 134 N., R. 43 W., southwest corner of sec. 14, 35 feet northeast of B. Langer's mail box; iron post stamped "1345 Minn"	1, 344. 925
T. 134 N., R. 43 W., 800 feet west of northwest corner of sec. 14; 5 feet north of road; spike in stump marked "1287.8"	1, 287. 81
T. 134 N., R. 43 W., 0.25 mile south of northwest corner sec. 11, at foot of T. Svensgaard's mail box; iron stake marked "1336.5"	1, 336. 48
T. 134 N., R. 43 W., north quarter corner of sec. 11, 60 feet southwest of schoolhouse, 20 feet east of road; iron post stamped "1361 Minn"	1, 361. 305
T. 135 N., R. 43 W., northeast corner of sec. 34, 10 feet south of P. Ganen's mail box; iron post stamped "1431 Minn"	1, 431. 130
Erharts, on southwest corner of cement walk leading to A. O Solom's house on Main street; chiseled square.....	1, 293. 23
T. 135 N., R. 43 W., southwest corner of sec. 21, 1 mile west of Erharts, 200 feet north of schoolhouse (district No. 36); iron post stamped "1322 Minn."	1, 322. 067
T. 135 N., R. 44 W., southwest corner of sec. 25, 30 feet north of road near slough; iron post stamped "1281 Minn."	1, 280. 767

Southeast corner of sec. 25, T. 135 N., R. 44 W.. south along highways to Fergus Falls.

T. 134 N., R. 43 W., 1,600 feet southeast of southwest corner of sec. 6, 15 feet north by 30 feet west of forks in road, at edge of O. Zimmerman's farm; iron post stamped "1338 Minn."	1, 337. 933
T. 134 N., R. 44 W., southeast corner of sec. 24, 175 feet north by 20 feet west of forks in road; iron post stamped "1338 Minn."	1, 338. 367
T. 133 N., R. 43 W., northwest corner of sec. 5, 30 feet north by 25 feet east of forks in road; iron post stamped "1308"	1, 308. 250
Fergus Falls, 5 miles northwest of, on northeast corner of bridge over Pelican River; bolt marked "1193.5"	1, 193. 38
T. 134 N., R. 43 W., southeast corner of sec. 31, 20 feet north by 30 feet west of crossroads; iron post stamped "1231"	1, 230. 824

Fergus Falls east 2.5 miles along Great Northern Railway.

Fergus Falls, south of track on southeast foundation of Great Northern Railway water tank in southeast corner of stone; the bottom of a hole in a horizontal surface 25 millimeters square and 4 millimeters deep (Coast and Geodetic Survey bench mark).....	1, 195. 684
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Fergus Falls, 2.5 miles east of, 9 feet north of railroad, 720 feet west of Electric Power Co.'s dam across Ottertail River; highest point of granite rock..... 1, 126. 29

Northeast corner of sec. 32, T. 135 N., R. 42 W., to north line of sec. 11, T. 134 N., R. 43 W.

T. 135 N., R. 42 W., 60 feet west by 25 feet south of northeast corner of sec. 32; highest point on granite rock..... 1, 469. 95
 T. 135 N., R. 42 W., 20 feet north by 25 feet east of southwest corner of sec. 32; iron post stamped "1449"..... 1, 448. 641
 T. 135 N., R. 43 W., southeast corner of sec. 36, 60 feet west by 25 feet north of; chiseled square on granite rock..... 1, 483. 82
 T. 134 N., R. 43 W., north quarter corner of sec. 11, 60 feet southwest of schoolhouse, 20 feet east to public road; iron post stamped "1361 Minn." 1, 361. 305

Point near southwest corner of sec. 3, T. 133 N., R. 44 W., to point near southwest corner of sec. 8, T. 134 N., R. 44 W.

French, T. 133 N., R. 44 W., 60 feet west of station, 60 feet north of Northern Pacific Railway; iron post stamped "1111"..... 1, 111. 260
 T. 133 N., R. 44 W., 30 feet west of southeast corner of sec. 16; iron post stamped "1191"..... 1, 191. 164
 T. 133 N., R. 44 W., 15 feet south of northwest corner of sec. 16; highest point on granite rock..... 1, 144. 19
 T. 133 N., R. 44 W., 30 feet south by 30 feet east of northwest corner of sec. 8; iron post stamped "1124"..... 1, 124. 304
 T. 134 N., R. 44 W., 20 feet south of northwest corner of sec. 31; top of granite rock..... 1, 152. 16
 T. 134 N., R. 44 W., 45 feet west by 25 feet south of northeast corner of sec. 30; iron post stamped "1161"..... 1, 160. 869

BATTLE LAKE QUADRANGLE.

Point 5.2 miles east of Underwood east along Great Northern Railway to Battle Lake, thence north along highways to southwest corner of sec. 16, T. 134 N., R. 40 W.

Underwood, 5.2 miles east of, 25 feet south of railroad, 50 feet east of wagon road, at private crossing; highest point on granite rock..... 1, 339. 84
 Battle Lake, southeast corner of yard of new schoolhouse; iron post stamped "1373 Prim. Trav. Sta. No. 13" (on unchecked spur line)..... 1, 373. 256
 T. 133 N., R. 40 W., 20 feet east by 25 feet north of southwest corner of SE. $\frac{1}{4}$ sec. 20, 3.2 miles northwest of Battle Lake; iron post stamped "1338".... 1, 388. 196
 T. 133 N., R. 40 W., near southeast corner of NW. $\frac{1}{4}$ sec. 9; iron post stamped "Prim. Trav. Sta. No. 15, 1363"..... 1, 362. 603
 T. 133 N., R. 40 W.; north of first bolt head on northeast corner of bridge over Red River at outlet of Ottertail Lake..... 1, 327. 08
 Red River; surface of water under bridge, Nov. 1, 1910..... 1, 319. 2
 T. 134 N., R. 40 W., at T road west, on west end of Ottertail Lake; iron post stamped "Prim. Trav. Sta. No. 16, 1330"..... 1, 330. 418
 T. 134 N., R. 40 W., near southwest corner of sec. 16, in southwest corner of church lot; iron post stamped "Prim. Trav. Sta. No. 17, 1368" (on unchecked spur line)..... 1, 368. 330

ROTHSAY QUADRANGLE.

Northeast corner of sec. 32, T. 135 N., R. 44 W., to Rothsay.

T. 135 N., R. 44 W., 0.2 mile west of northeast corner of sec. 32, 30 feet south of road; iron post stamped "1279 Minn."..... 1, 279. 252
 Rothsay, on cement step of east door on north side of brick creamery; chiseled point..... 1, 198. 47

Rothsay, First State Bank Building corner Second and Main Streets; chiseled hole in step on south side (Coast and Geodetic Survey bench mark).....	Feet. 1, 201. 632
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Northwest corner of sec. 8, T. 134 N., R. 44 W., north to Rothsay.

T. 134 N., R. 44 W., 40 feet south by 25 feet west of northwest corner of sec. 8; iron post stamped "1188".....	1, 188. 584
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UNDERWOOD QUADRANGLE.

Point 3.3 miles east of Fergus Falls along Great Northern Railway to Underwood, thence north along highways to point near corner of sec. 20, T. 135 N., R. 42 W.

Wall Lake, 0.6 mile west of, 40 feet south of railroad, in northwest corner of railroad right-of-way, at railroad crossing; iron post stamped "1257"....	1, 256. 877
Wall Lake, in front of station; top of rail.	1, 288. 4
Underwood, 3.2 miles west of, 50 feet north of railroad, in southeast corner of T road; iron post stamped "1339".....	1, 339. 015
Underwood, 40 feet west of station, 20 feet south of railroad track, in small grass park; iron post stamped "1343".....	1, 342. 640
Underwood, 1 mile north of, at T road east, west side of road; paint spot on highest point on large rock.....	1, 361. 00
T. 133 N., R. 41 W., near center of sec. 20, 75 feet northwest of schoolhouse No. 109, in southeast corner of C. A. Weaver's farm; iron post stamped "1347".....	1, 347. 259
Underwood, 3.5 miles north of, on concrete foundation of guide post marked "Fergus Falls 12 miles, Underwood 3.5 miles, Phelps 6 miles"; chiseled square.....	1, 341. 22
Underwood, 5.6 miles north of, northwest corner of bridge over ditch that connects Lake Anna with Little Lake Anna; nailhead.....	1, 325. 66
T. 133 N., R. 41 W., near southwest corner of sec. 4, on east side of road; iron post stamped "1345".....	1, 344. 867
T. 133 N., R. 41 W., near northwest corner of sec. 4, 150 feet northwest of schoolhouse; iron bolt in root of elm tree.....	1, 379. 55
T. 134 N., R. 41 W., in sec. 31, on east side of road, at Y road between Lost Lake and Little Lost Lake; iron post stamped "1321".....	1, 321. 006
Wegland post office, 0.6 mile south of, on west side of road opposite lake; chiseled square on granite rock.....	1, 339. 50
Wegland, in front of post office; ground elevation.....	1, 350. 8
Wegland, 0.4 mile northeast of, in sec. 26, T. 134 N., R. 42 W., 60 feet north of north end of Wegland bridge over Ottertail River, in forks of road; iron post stamped "1313 Minn. ".....	1, 312. 620
T. 134 N., R. 42 W., 22 feet northeast of southwest corner of sec. 14; chiseled square on large granite rock.....	1, 332. 01
T. 134 N., R. 42 W., in south part of sec. 14, 17 feet south of road at Y road; chiseled square on top of large granite rock.....	1, 397. 57
T. 134 N., R. 42 W., 2 feet south of northeast corner of SE. $\frac{1}{4}$ sec. 14; iron post stamped "1372".....	1, 371. 724
T. 135 N., R. 41 W., 555 feet north of southwest corner of SE. $\frac{1}{4}$ sec. 31; iron post stamped "1363 Minn.".....	1, 362. 697
T. 135 N., R. 41 W., near southwest corner of NW. $\frac{1}{4}$ sec. 30, in northwest corner of crossroads; chiseled square on granite rock.....	1, 403. 10
T. 135 N., R. 42 W., 30 feet south of northeast corner of sec. 26; iron post stamped "1415".....	1, 414. 842
T. 135 N., R. 42 W., 20 feet south by 30 feet west of northeast corner of sec. 27, 270 feet west of schoolhouse; chiseled square on rock.....	1, 459. 55
T. 135 N., R. 42 W., near southeast corner of sec. 20, 30 feet north by 30 feet east of center of crossroads; iron post stamped "1439".....	1, 438. 644

Underwood east along Great Northern Railway 3.57 miles.

Underwood, 2 miles east of, 25 feet south of railroad, 20 feet west of wagon road at railroad crossing; highest point on granite rock.....	Feet. 1, 344. 77
Underwood, 3.6 miles east of, 45 feet south of railroad, on right of way, 15 feet east of T road north; iron post stamped "1342".....	1, 341. 573

Point near northwest corner of sec. 20, T. 134 N., R. 40 W., east along highways to southwest corner of NW. $\frac{1}{4}$ sec. 30, T. 135 N., R. 41 W.

T. 134 N., R. 41 W., 330 feet west of southeast corner of sec. 1, on east side of road; iron post stamped "1332".....	1, 331. 534
T. 134 N., R. 41 W., 16.5 feet south by 650 feet east of northwest corner of sec. 3; iron post stamped "1337" (in forks of road).....	1, 338. 284
T. 135 N., R. 41 W., northwest corner of T road north, at Star Lake; spike in root of elm tree.....	1, 334. 16
Bridge at west end of Dead Lake.....	1, 332. 8
T. 135 N., R. 41 W., near northeast corner of SW. $\frac{1}{4}$ sec. 28, 1.2 miles north of Star Lake; spike in root of oak tree.....	1, 354. 10
T. 135 N., R. 41 W., near northeast corner of sec. 29; iron post stamped "Prim. Trav. Sta. No. 20 1375".....	1, 375. 835
T. 135 N., R. 41 W., near southwest corner of NW. $\frac{1}{4}$ sec. 30, in northwest corner of crossroads; chiseled square on granite rock.....	1, 403. 103

Anoka and White Bear Quadrangles.**ANOKA, HENNEPIN, AND RAMSEY COUNTIES.**

The elevations in the following list are based on various bench marks of the Mississippi River Commission in this locality. The elevation of the bench mark in the west end of doorsill at south entrance to basement of courthouse at St. Paul, Minn., which is a copper bolt marked "U. S. P. B. M. 72," is taken as 780.555 feet above mean sea level.

The leveling was done in 1899 by D. C. Wray.

WHITE BEAR QUADRANGLE.

St. Paul north along Rice Street, thence east along roads to White Bear, thence south to St. Paul.

T. 29 N., R. 22 W., northwest corner of sec. 6; iron post stamped "St. P. 924".....	Feet. 925. 422
White Bear, in northwest corner of Catholic Church yard; iron post stamped "932 St. P.".....	934. 106

White Bear north along highway to center of T. 32 N., R. 22 W., thence southwest to Minneapolis.

Centerville, at southeast corner of cemetery; iron post stamped "909 St. P." ..	910. 646
T. 32 N., R. 22 W., sec. 28, at southeast corner of schoolhouse yard (district No. 9), east side of road; iron post stamped "909 St. P.".....	910. 542
T. 31 N., R. 23 W., crossroads, 0.25 mile north of southeast corner of sec. 26; iron post stamped "910 St. P.".....	911. 741
T. 30 N., R. 23 W., in southeast corner of sec. 17, 1.5 miles north of New Brighton, at junction of road to east with north and south road; iron post stamped "913 St. P.".....	914. 359

Findley east to and north along Central Avenue to T. 32 N., R. 23 W., sec. 20.

T. 32 N., R. 23 W., center of sec. 20, at forks of Central Avenue and Anoka roads; iron post stamped "905 St. P.".....	Feet. 906.321
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ANOKA QUADRANGLE.

Bench mark east of Findley.

T. 30 N., R. 24 W., 0.2 mile west of center of sec. 14; east corner of school yard; iron post stamped "858 St. P.".....	859.425
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T. 32 N., R. 23 W., west and thence south to Powell.

T. 32 N., R. 24 W., near center of sec. 26; on west line of schoolhouse yard, 50 feet north of east and west road; iron post stamped "891 St. P.".....	892.617
T. 31 N., R. 24 W., quarter corner north side of sec. 16, at southwest corner of crossroads; iron post stamped "869 St. P.".....	870.811

Anoka north 4 miles, thence southwest to river.

T. 32 N., R. 25 W., northwest corner of sec. 26, 50 feet east of crossroads; iron post stamped "892 St. P.".....	893.961
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Anoka west along highway to Dayton, thence south to Rockford Road, thence east to Robinsdale, thence north to Anoka.

T. 120 N., R. 22 W., southeast quarter of sec. 17, in southwest corner of town hall of Dayton township; iron post stamped "912 St. P.".....	913.705
T. 119 N., R. 22 W., sec. 27, near center of, in southeast corner of schoolhouse yard, northwest corner of crossroads; iron post stamped "942 St. P."..	944.172
T. 118 N., R. 22 W., on north and south quarter line of sec. 14, at northeast corner of German Lutheran churchyard, 300 feet north of Rockford Road; iron post stamped "943 St. P.".....	944.695
Robinsdale, on south line of Village Hall; iron post stamped "879 St. P."..	880.927
T. 119 N., R. 21 W., sec. 21, 0.25 mile east of southwest corner of, in northwest corner of yard of Brooklyn town hall; iron post stamped "879 St. P."..	880.148
T. 120 N., R. 21 W., quarter corner south side of sec. 30, northwest corner of school yard, east side of Champlain and Anoka Roads; iron post stamped "883 St. P.".....	884.750

Minnetonka and Norwood Quadrangles.

CARVER AND HENNEPIN COUNTIES.

The elevations in the following list are based on bench marks of the Mississippi River Commission through leveling on the Anoka quadrangle.

The leveling was done in 1905 by H. Bucher.

The standard bench marks are stamped "ADJ 1903" in addition to the figures of elevation.

MINNETONKA QUADRANGLE.

German Lutheran Church in sec. 14, T. 118 N., R. 22 W., southwest to point about 1 mile east of town of Waysata and return.

T. 118 N., R. 22 W., 0.2 mile north of southeast corner of sec. 30, at southwest corner of crossroads, between two mail box posts; iron post stamped "ADJ 1903 996".....	Feet. 996.353
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Wayzata west along railroad and highway to sec. 34, T. 118 N., R. 24 W.; thence southwest to St. Bonifacius.

	Feet.
Ferndale station, Great Northern Railway, 50 feet east of station; top of rail.....	984. 7
Long Lake station, at crossing; top of rail.....	989. 1
Long Lake station, on east side of wagon road 20 feet north of track, 5 feet west of large telegraph pole; iron post stamped "ADJ 1903 989".....	988. 877
T. 118 N., R. 23 W., northwest corner of sec. 32, 0.2 mile from crossroads on north side of Great Northern Railway, at northeast corner, 28 feet east of fence corner, 1 foot south of fence; iron post stamped "ADJ 1903 997".....	996. 889
T. 118 N., R. 24 W., 0.1 mile east of northwest corner of sec. 35, at northwest corner of lawn of house of F. O. Johnson, in large white boulder on south side of road; aluminum tablet stamped "ADJ 1903 1024".....	1,023. 974
T. 117 N., R. 24 W., 0.3 mile north of southwest corner of sec. 3, on north side of road at northeast corner of crossroads, 10 feet west of large elm; iron post stamped "ADJ 1903 968".....	968. 507
T. 117 N., R. 24 W., northwest corner of sec. 17, at southwest corner of crossroads, 5 feet from fence corner; iron post stamped "ADJ 1903 967".....	966. 925
T. 117 N., R. 24 W., 0.3 mile north of southwest corner of sec. 32, 0.6 mile south of St. Bonifacius, on east side of road at southwest corner of Thos. Kohlman's yard, primary traverse post, No. 7; iron post stamped "ADJ 1903 960".....	959. 895

St. Bonifacius east along highway and railroad to Excelsior, thence north to Wayzata.

T. 116 N., R. 24 W., northwest corner of sec. 3, at southeast corner of road intersection, 10 feet south of guide post at corner; iron post stamped "ADJ 1903 1005".....	1,004. 968
T. 116 N., R. 24 W., 0.3 mile north by 0.1 mile west of southeast corner of sec. 1, at southeast corner of schoolhouse, on north side of road, at intersection; iron post stamped "ADJ 1903 1020".....	1,019. 855
Eureka station, 400 feet northeast of, in lower upright stone of stone culvert under fill, at west corner; aluminum tablet stamped "ADJ 1903 957".....	956. 957
Excelsior schoolhouse, in top row of masonry of west wall, 4 feet north of southwest corner of building; aluminum tablet stamped "ADJ 1903 973".....	973. 295
T. 117 N., R. 23 W., 0.1 mile north of southeast corner of sec. 24, in northeast corner of Deephaven schoolhouse grounds, south of north fence and 3 feet west of northeast corner; iron post stamped "ADJ 1903 984".....	984. 512
Northome, road crossing; top of rail.....	939. 8
Breezy Point, road crossing; top of rail.....	954. 2
T. 117 N., R. 22 W., 0.1 mile south of northeast corner of sec. 18, on west side of road, 22 feet north of track of Chicago, Milwaukee & St. Paul Railway, 22 feet east of cattle-guard fence and 9 feet northwest of crossing post; iron post stamped "ADJ 1903 964".....	964. 542

Excelsior south along highway to Shakopee, thence west along railroad, thence north to St. Bonifacius.

T. 116 N., R. 23 W., 300 feet south of northeast corner of sec. 1, on west side of road, primary traverse point No. 3; iron post stamped "Prim. Trav. Sta. No. 3, ADJ 1903 957".....	957. 708
Chanhassen, in masonry abutment wall around St. Ruperts Church, 17 feet south of end of wall at church step, 6 feet north of gateway to garden; aluminum tablet stamped "ADJ 1903 976".....	976. 093

T. 116 N., R. 23 W., 0.1 mile north by 0.1 mile east of west quarter corner of sec. 36, 15 feet north of Minneapolis & St. Louis Railroad, 100 feet west of railroad bridge over wagon road, primary traverse No. 4; iron post stamped "ADJ 1903 815"	Feet. 815.650
Shakopee, at courthouse, in masonry foundation of east wing of, 14 feet south of northeast corner of wing; aluminum tablet stamped "ADJ 1903 792"	792.211
Chaska, 40 feet west of station, 15 feet north of track of Minneapolis & St. Louis Railroad, "Prim. Trav. Sta. No. 5;" iron post stamped "ADJ 1903 728"	728.781
T. 115 N., R. 23 W., in SE. $\frac{1}{4}$ sec. 18, Carver station, Chicago, Milwaukee & St. Paul Railroad, on west side of public road, 20 feet south of main track, 4.5 feet south of crossing; iron post stamped "ADJ 1903 815"	815.435
T. 115 N., R. 24 W., 0.1 mile south of northeast corner of sec. 15, on east side of public road, 34 feet south of Chicago, Milwaukee & St. Paul track, 18 feet west of fence; iron post stamped "ADJ 1903 981"	981.335
T. 115 N., R. 24 W., southwest corner of sec. 9, at northeast corner of cross-roads, 3 feet north of and 1.5 feet west of fence; iron post stamped "ADJ 1903 933"	933.378
T. 116 N., R. 24 W., 0.2 mile west of southeast corner of sec. 34, railroad crossing at Augusta Station, Chicago, Milwaukee & St. Paul Railroad, at southeast corner of, 1 foot northwest of fence and 11 feet southwest of fence corner; iron post stamped "ADJ 1903 982"	982.726
T. 116 N., R. 24 W., 0.1 mile north of south quarter corner of sec. 21, on east side of road, 34 feet south of private road (to west), to house of F. J. Poppler, 1 foot west of fence and 14 feet north of 30-inch cottonwood tree; iron post stamped "ADJ 1903 1019"	1,019.294

NORWOOD QUADRANGLE.

T. 116 N., R. 24 W., 0.1 mile west of north quarter corner of sec. 18, at southwest corner of grounds of Swedish Baptist Church, at northeast corner of road intersection, on line of fence, on east side of road; iron post stamped "ADJ 1903 1012"	1,011.873
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Elk River and Rockford Quadrangles.

HENNEPIN AND WRIGHT COUNTIES.

The elevations in the following list are based on the precise leveling of the Mississippi River Commission through leveling on Minneapolis and Lake Minnetonka quadrangles; no connection was made at Dayton.

The leveling was done in 1907 by E. M. Bandli.

ROCKFORD QUADRANGLE.

Point near Maple Plain northwest along highway and north to schoolhouse at northeast corner of sec. 15, T. 119 N., R. 24 W., thence east to sec. 25, T. 119 N., R. 23 W., thence south to sec. 30, T. 118 N., R. 23 W.

T. 118 N., R. 23 W., sec. 32, in northwest corner of, 0.2 mile from cross-roads on north side of Great Northern Railway at northeast corner, 28 feet east of fence corner, 1 foot south of fence; iron post stamped "997 ADJ 1903"	Feet. 996.885
Maple Plain, T. 118 N., R. 24 W., near center of sec. 25, railroad crossing just west of station, top of north rail	1,013.3

Armstrong, T. 118 N., R. 24 W., near west center of sec. 23, at road crossing; top of south rail of Great Northern Railroad.....	Feet. 986. 4
T. 118 N., R. 24 W., sec. 4, south center of, 1 foot west of fence corner at southeast corner of crossroads; iron post stamped "1034".....	1, 034. 347
T. 119 N., R. 24 W., sec. 28, east center of, northwest corner of crossroads, 1 foot east of southeast corner of schoolhouse; iron post stamped "1035".....	1, 035. 221
T. 119 N., R. 24 W., sec. 15, near northeast corner of, southwest corner of crossroads, 1 foot from northeast corner of schoolhouse; iron post-stamped "996".....	996. 592
T. 119 N., R. 23 W., sec. 18, near north center of, Buschville, 90 feet west of southwest corner of crossroads at corner of lane fence; iron post stamped "1011".....	1, 012. 091
Corcoran, Town Hall, T. 119 N., R. 23 W., sec. 16, near east center of, in southeast corner of crossroads, 1 foot north by 1 foot east of; iron post stamped "1027".....	1, 028. 927
T. 119 N., R. 23 W., east center of sec. 25, southeast corner of T road, 1 foot from fence, 6.5 feet south of corner; iron post stamped "979".....	979. 715
Hamel, T. 118 N., R. 23 W., sec. 12, near southeast corner of; 50 feet north of "Soo" track and a few rods from station; iron post stamped "986"....	986. 402
T. 118 N., R. 22 W., sec. 30, near east center of, northwest corner of T road intersection; iron post stamped "Prim. Trav. Sta. No. 2, 1904, C. R. 998".....	1, 002. 344
Sec. 15, T. 119 N., R. 24 W., northwest and north to sec. 33, T. 121 N., R. 24 W., thence east to schoolhouse in sec. 31, T. 121 N., R. 23 W.	
T. 120 N. R. 24 W., sec 4, northeast corner of, in southeast corner of road intersection, 2 feet north from southeast corner fence post; iron post stamped "996".....	996. 323
T. 120 N., R. 24 W., sec. 29, north center of, 10 feet east by 4 feet north of crossroads near northeast corner fence post, in northeast corner of T road intersection; iron post stamped "998".....	997. 798
T. 120 N., R. 24 W., sec. 9, near west center of, in northeast corner of T road intersection, 5 feet south of southeast corner of schoolhouse, 1.5 feet east of southeast corner of hall; iron post stamped "963".....	963. 586
T. 121 N., R. 24 W., sec. 33, center of, opposite T road intersection; iron post stamped "Prim. Trav. Sta. No. 10 974".....	974. 631
T. 121 N., R. 24 W., sec. 35, near southeast corner of, at road crossing, in northwest corner of, 8 feet north of northwest corner fence post and 2 feet east of fence in Great Northern Railroad right of way; iron post stamped "961".....	960. 784
T. 121 N., R. 23 W., sec. 31, in northeast quarter of south side of schoolhouse 3 feet east by 1 foot north of southeast corner of projecting entrance of hall; iron post stamped "950".....	958. 690
Dayton south along highway to sec. 25, T. 119 N., R. 23 W.	
Dayton, west of, T. 121 N., R. 23 W., east center of sec. 36, at northeast corner of bridge across Crow River, 6 feet west of lamp post; aluminum tablet stamped "864".....	864. 627
T. 120 N., R. 23 W., sec. 30, southwest corner of, 3 feet north of telegraph pole, east of T road, south of Great Northern Railroad; iron post stamped "958".....	959. 017
T. 119 N., R. 23 W., sec. 12, east center of, 3 feet northwest of southwest corner fence post, in southwest corner of crossroads; iron post stamped "939".....	938. 911

ELK RIVER QUADRANGLE.

Sec. 31, T. 121 N., R. 23 W., east to Dayton.

T. 121 N., R. 23 W., sec. 26, southwest corner of, 2 feet west of northeast corner fence post, at T road intersection; iron post stamped "880"	Feet. 880. 307
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Center City and St. Croix Dalles Quadrangles.**CHISAGO COUNTY.**

The elevations in the following list are based upon P. B. M. 29A of the precise leveling of the United States Engineer Corps at the village of Wyoming, the elevation of which is 892.119 feet above mean sea level. From this point a double rodged line of primary levels was run to Taylors Falls, the remainder of the work being based thereon. The bench marks in Wisconsin upon St. Croix Dalles quadrangle are given in another list.

The leveling was done in 1897 by S. P. Connor.

CENTER CITY QUADRANGLE.

Chisago City east along Northern Pacific Railway to Center City.

Chisago City, in southeast corner of station platform; copper nail.....	Feet. 922. 92
Center City, in southwest corner of station platform; copper nail.....	907. 93

ST. CROIX DALLES QUADRANGLE.

Center City east along Northern Pacific Railway to Taylors Falls.

Shafer, in front of station; top of rail.....	941. 7
T. 34 N., R. 19 W., sec. 32, southwest quarter of, 100 feet west of railroad station at Shafer; iron post stamped "T F 941"	942. 968
Franconia, in front of station; top of rail.....	910. 8
Taylors Falls, opposite east door of station; top of platform.....	800. 00
Taylors Falls, in front of station; top of rail.....	796. 2
Taylors Falls, Hotel Cocheco, front wall, northwest corner of; bronze tablet stamped "T F 757"	758. 720
Taylors Falls, brick schoolhouse 100 feet north of; bronze tablet in trap rock stamped "T F 890"	892. 035
Taylors Falls, 100 feet south of Taylors Falls bridge tollhouse, in top of stone; bronze tablet stamped "T F 713"	714. 960
Taylors Falls, at boat landing, in flat trap rock; bronze tablet stamped "T F 703"	704. 817
Taylors Falls, southwest corner of street north of Inter-State Park office, in stone; bronze tablet stamped "T F 743"	744. 735
T. 35 N., R. 19 W., sec. 34, in east half of, in front of Daubney's house; iron post stamped "T F 773"	774. 657

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